The Impact of the Global Financial Crisis on the Comparative Value Relevance of GAAP versus Non-GAAP Earnings

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DECLARATION

I hereby declare that this thesis is my original written work, except where due reference and acknowledgement of another source has been made.

Seng Thiam Teh
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Hic labor extremus, longarum haec meta viarum

Virgil, *Aeneid*

Completing this thesis has been one of the most challenging endeavours in my life. As Dickens wrote in *A Tale of Two Cities*:

> It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us…

Throughout the journey to complete this thesis, I have felt all the above. I would not have made it this far were it not for family, friends and colleagues who have, each in their own way, provided the love and support to sustain me through it all.

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This journey is ended and a new one begins.

ABSTRACT

I examine the value relevance of earnings measures based on generally accepted accounting principles (GAAP) relative to non-GAAP earnings measures using six earnings measures: I/B/E/S earnings; Standard & Poor's Core earnings; cash earnings; cash flows from operations; earnings from operations adjusted to exclude special items; and income before extraordinary items. I adopt the Ohlson (1995; 1999) valuation model to test value relevance and a cumulative abnormal returns model to test the information content of these alternative earnings measures. Prior studies consistently show non-GAAP earnings are significantly more value relevant than GAAP earnings (Bradshaw and Sloan, 2002; Bhattacharya *et al.*, 2003; Brown and Sivakumar, 2003; Albring *et al.*, 2010) and that information risk is priced by investors (Easley and O'Hara, 2004). Therefore, factors that impact on information risk, such as, information asymmetry, earnings quality and conservatism, may affect the value relevance of GAAP and non-GAAP earnings. However, prior studies do not examine the impact of these factors on the relative and incremental value relevance GAAP versus non-GAAP earnings. I separately control and test for the impact of information asymmetry, earnings quality and conservatism on the comparative value relevance of GAAP and non-GAAP earnings.

Furthermore, I argue that firm size may impact on the value relevance of GAAP and non-GAAP earnings. In addition, industry may have an effect on the value relevance of earnings, particularly for firms in the financial sector because of their capital structure and regulatory environment. However, prior studies do not investigate the impact of financial and non-financial firms and of size on the value relevance and informativeness of GAAP and non-GAAP earnings. I consider these issues by separately analysing samples of financial, non-financial, S&P 500 and non-S&P 500 firms.

Prior studies generally present evidence from before the GFC and there is no published research on the value relevance of these earnings metrics that examine the impact of the GFC. Therefore, I examine the impact of the GFC on the value relevance of GAAP and non-GAAP earnings measures before, during and after the GFC. Additionally, prior research focuses on GAAP earnings and pro forma or I/B/E/S earnings. As mentioned above, I use six earnings measures.

My sample is drawn from US publicly traded firms between 2002 and 2012. My results indicate that GAAP earnings are incrementally value relevant and that non-GAAP earnings are not consistently more value relevant than GAAP earnings. I find evidence that information asymmetry, earnings quality and conservatism are systematically related to the comparative value relevance of GAAP and non-GAAP earnings. I also find that sample selection impacts on the findings. In addition, investors shift their emphasis on GAAP and non-GAAP earnings over time as a consequence of the GFC and investors generally place greater emphasis on the book value of equity in pricing shares. My findings highlight the fluid nature of the relative emphasis investors place on alternative earnings measures. They provide insights on the impact of information asymmetry, earnings quality and conservatism, and of the GFC on the emphasis investors place on earnings information.

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ABBREVIATIONS

AQ	Accruals Quality
AT	Asymmetric Timeliness
CAPM	Capital Asset Pricing Model
CAR	Cumulative Abnormal Returns
CBOE	Chicago Board Options Exchange
CRSP	Centre for Research in Security Prices
GAAP	Generally Accepted Accounting Principles
GFC	Global Financial Crisis
IAI	Information Asymmetry Index
IBES	Institutional Brokers' Estimate System
LIBOR	London Interbank Offered Rate
MTB	Market-to-Book
OIS	Overnight Indexed Swap
S&P	Standard & Poor's
S&P 500	Standard & Poor's 500 Index
SEC	Securities and Exchange Commission
SOX	Sarbanes-Oxley Act
UAF	Unexplained Audit Fees
VIX	Volatility Index

FIGURES

TABLES

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

There is much research on the information content and value relevance of earnings measures based on generally accepted accounting principles (GAAP) relative to non-GAAP measures. Prior research (Bradshaw and Sloan, 2002; Bhattacharya *et al*., 2003; Doyle *et al*., 2003; Lougee and Marquardt, 2004) finds that non-GAAP earnings (e.g., street, pro forma or I/B/E/S earnings) are significantly more value relevant and informative relative to GAAP earnings. However, much of this evidence is based on samples from before 2006, i.e., before the global financial crisis (GFC). Albring *et al*. (2010) covers the period 2002 to 2007 in their study, which includes the beginning of the GFC. However, they did not investigate the impact of the GFC in their study. In another recent study, Wieland *et al*. (2013) examine the value relevance of Standard & Poor's (S&P) Core Earnings metric after controlling for mandated recognition of stock option expense in the income statement effective from 2005. While their sample comprises data from 2001 to 2009, they only test the impact of the GFC in their study by controlling for goodwill impairment. Consequently, these studies do not investigate the impact of the GFC on the value relevance or informativeness of non-GAAP earnings relative to GAAP earnings. To the best of my knowledge, there is no research on the value relevance of these earnings metrics post-2006 that specifically addresses the GFC and its impact. This is somewhat surprising given that during this period, there is increased focus on the reliability of earnings information.

Furthermore, the GFC created a climate of volatility and uncertainty in the capital markets, which may impact on how investors perceive the credibility and value relevance of earnings, and the sources from which they are produced. Figure 1.1 shows the daily Chicago Board Options Exchange (CBOE) Volatility Index (VIX), a commonly used measure of investor sentiment and market volatility, over the period from January 2002 to December 2012.[1] There is a steep increase in the index around the middle of 2007 and a subsequent decrease to late 2008. This marked movement in VIX corresponds to the peak of the GFC.

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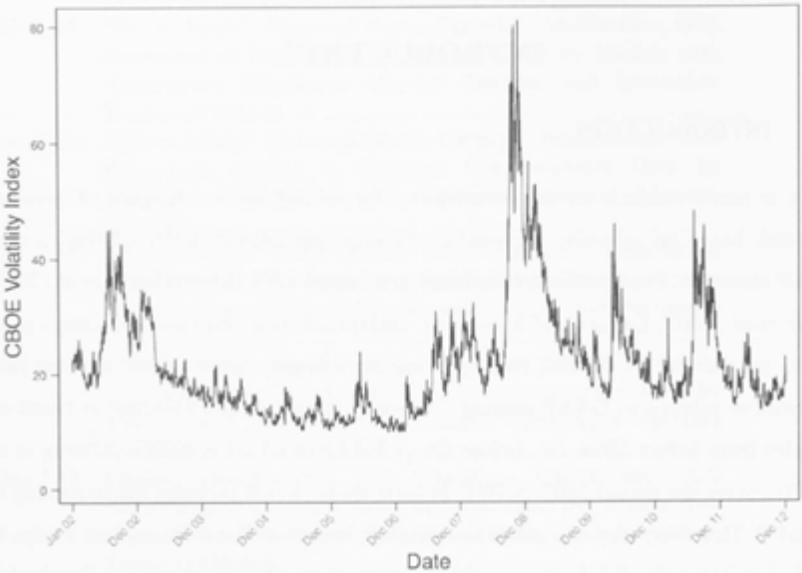
[1] The data for Figure 1.1 is publicly available from the Chicago Board Options Exchange website.

Figure 1.1: Daily Chicago Board Options Exchange (CBOE) Volatility Index over the period from 1 January 2002 to 31 December 2012



Importantly, the relative uncertainty and volatility due to the GFC have strong implications on investors' information risk and how they manage this risk. Specifically, this impact on information risk means the relative emphasis investors place on GAAP and non-GAAP earnings may vary between low and high levels of factors that affect information risk, such as information asymmetry, earnings quality and conservatism. However, to the best of my knowledge, there are no studies that specifically control for the level of information asymmetry, earnings quality or conservatism when examining the comparative value relevance and informativeness of GAAP and non-GAAP earnings.

Prior to the GFC, there were concerns with pro forma earnings, specifically with the quality of the information and the potential for it to be biased given management's vested interests. This led to the Securities and Exchange Commission (SEC) instituting regulations limiting the use of non-GAAP earnings metrics (Securities and Exchange Commission, 2001; Securities and Exchange Commission, 2002). Nevertheless, security analysts tracking services (e.g., I/B/E/S and First Call) and credit rating agencies (e.g., Moody's and Standard & Poor's) continue to produce their own earnings measures. Given the greater scrutiny of non-GAAP earnings since 2002 and the impact of the

GFC, an important research question is: Do investors continue to place greater value relevance on non-GAAP earnings measures relative to GAAP earnings?

Generally, pro forma earnings are produced by firms to supplement their reported GAAP earnings, while street and I/B/E/S earnings are produced by analysts. Non-GAAP earnings are generally more selective than GAAP earnings in that "other non-operating" items are excluded and these earnings are argued to better represent continuing performance. Bowen *et al*. (2005) provide evidence that firms tend to place greater relative emphasis on pro forma earnings when they have less value relevant GAAP earnings. Bhattacharya *et al*. (2003) estimate that while only a small proportion of firms report any pro forma or non-GAAP figures between 1998 and 2000, the number of firms doing so increased during this period. In a subsequent study, Bhattacharya *et al*. (2007) report an increase in pro forma reporting from 1998 until 2001 followed by a dramatic drop in the third quarter of 2002 coinciding with the enactment of the Sarbanes-Oxley Act (SOX) in July 2002. Doyle *et al*. (2003) suggest that the market may misprice stock or be misled by pro forma earnings, while Johnson and Schwartz (2005) report results that do not support this view.

These studies focus primarily on earnings measures produced either by the firm (GAAP and pro forma earnings) or security analysts (street and I/B/E/S earnings). On the other hand, credit rating agencies such as Standard & Poor's (S&P) also provide alternative information to capital markets. The credit ratings issued by these agencies are extremely important as they represent an independent evaluation of firms' default risks (Graham and Harvey, 2001; Gray *et al*., 2006). Credit rating agencies also produce their own alternative measures of earnings. It is conceivable that earnings measures produced by credit rating agencies are value relevant given the role of credit agencies in financial markets. Nevertheless, there have been concerns that credit rating agencies bear strong responsibility for contributing to the subprime crisis through being lax in the ratings of some structured finance products. Consequently, it is questionable whether credit rating agencies are unbiased.[2] Measures of earnings by credit agencies, however, have received little attention in the GAAP vs Street literature.

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[2] The literature suggests that credit rating agencies may inflate ratings, however, under certain conditions, regulations (Stolper, 2009) and reputational effects (Mathis *et al*., 2009) may provide incentives for agencies to assign correct ratings. Interestingly, Bolton *et al*. (2012) demonstrate that a monopoly is generally more efficient than a duopoly in inducing higher ratings quality as the latter provide more opportunities for an issuer to shop for a good rating.

In addition, prior studies use different samples of firms, e.g., firms of somewhat similar size (e.g., only S&P 500 firms) and firms from different industries that meet data requirements (e.g., all firms with available data, or firms with pro forma disclosures) and limit the alternative earnings measures used (e.g., most studies compare I/B/E/S earnings to GAAP earnings but do not consider other alternative earnings measures on a systematic and comprehensive basis such as cash flows, nor do they consider these alternative earnings measures collectively) which is not conducive to making a direct comparison of their findings. For example, Brown and Sivakumar (2003) investigate the value relevance of GAAP and I/B/E/S earnings and use quarterly data for all firms from 1989 to 1997. However, they do not separately test nor control for industry or firm size. Similarly, Wieland *et al*. (2013) use a sample of all firms from 2001 to 2009, albeit with annual data. Furthermore, the period of their study does not allow for a detailed examination of the longer terms effects of the GFC, i.e., the effects after the GFC. Albring *et al*. (2010) examine the value relevance of GAAP and S&P's Core Earnings only on large firms, i.e., firms included in the S&P 500 index (S&P 500) but do not consider firms not included in the S&P 500 index. Lougee and Marquardt (2004) and Bowen *et al*. (2005) only use firms that actually released pro forma reports in their studies, which limits the generalizability of their findings. Consequently, the impact that firm size and industry may have on the value relevance of GAAP and these alternative non-GAAP earnings and the effects of the GFC remains relatively unexamined.

1.2 CONTRIBUTIONS OF MY STUDY

My study examines the impact of the GFC on the value relevance and informativeness of GAAP earnings and several measures of non-GAAP earnings. It differs from prior studies in several aspects. First, prior studies that investigate the relative or incremental value relevance of GAAP versus non-GAAP earnings do not examine the impact of information asymmetry, earnings quality or conservatism on these earnings metrics. I argue that because these factors impact on investors' information risk, different levels of information asymmetry, earnings quality and conservatism may impact on the comparative value relevance of GAAP and non-GAAP earnings to investors, particularly in an economic environment that is relatively uncertain and volatile. Since prior studies have not examined whether these factors impact on the value relevance of earnings measures, the current study addresses an important gap in the literature.

Easley and O'Hara (2004) demonstrate that information asymmetry is a non-diversifiable risk factor. Therefore, investors' level of information risk should impact on the value relevance of the different earnings measures, i.e., the extent to which an earnings measure mitigates their information risk. Furthermore, there is relatively greater uncertainty and volatility in the market during the GFC and post-GFC periods as is evident from the CBOE Volatility Index in Figure 1.1. Such conditions indicate the potential for significant information asymmetry in the market. Such an economic environment can exacerbate mis-valuation of assets and this may provide greater incentives for managers to disclose private information. While managers have incentives to bias these disclosures, the presence of regulation may mitigate this bias. GAAP mandated reporting of accounting earnings, and also regulations prescribing acceptable voluntary disclosures (e.g., Securities and Exchange Commission, 2001; Securities and Exchange Commission, 2002), ensure that there is a minimum level of disclosure as well as a certain level of credibility and reliability. There is evidence in the literature on both mandatory and voluntary disclosures indicating that these disclosures are value relevant and have information content.[3] Alternatively, investors may seek information from other parties, such as, security analysts and credit rating agencies. However, they are also subject to similar moral hazard and adverse selection problems. While this information is relevant, they remain unaudited. As a consequence, mandated GAAP earnings may play a role if investors are seeking credible and reliable information in a trade off with relevant information. Therefore, the credibility and reliability of financial information impact on the extent to which investors find GAAP and non-GAAP earnings value relevant. However, prior studies on the comparative value relevance of GAAP and non-GAAP earnings do not examine the impact of information asymmetry. My study addresses this gap in the literature.

Prior research on earnings quality generally focuses on GAAP and pro forma earnings.[4] However, there are few studies that specifically investigate the comparative earnings quality of street earnings with GAAP earnings. For example, Gu and Chen (2004) find evidence that street earnings are of higher quality than GAAP earnings and conclude that items included in street earnings more closely resemble permanent earnings while items excluded more closely resemble transitory earnings. Bhattacharya *et al*. (2003) find that pro forma earnings are more persistent and more informative than GAAP

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[3] Beyer *et al*. (2010) provide a recent review of the literature.

[4] The literature on earnings quality is extensive and Dechow *et al*. (2010) provide a comprehensive review. Nevertheless, these studies primarily focus on GAAP earnings.

earnings, which suggests that these measures of earnings are more persistent than GAAP earnings. To the extent that more persistent earnings reflect higher earnings quality, there is some evidence that certain non-GAAP earnings are of higher quality relative to GAAP earnings. However, prior research does not control for exposure to earnings quality and the impact that different levels of earnings quality may have on the comparative value relevance of GAAP and non-GAAP earnings. Several measures that proxy for earnings quality have been proposed in the literature, which include abnormal accruals (Dechow and Dichev, 2002; Jones, 1991), stock returns (Ecker *et al.*, 2006) and unexpected audit fees (Hribar *et al.*, 2014). However, not all measures of earnings quality are suitable for my study. For example, measures that use only abnormal accruals are unsuitable because I include earning measures such as I/B/E/S earnings and cash flow from operations. Security analysts are not consistent when adjusting for accruals to determine earnings recorded by I/B/E/S and cash flows do not include accruals. Therefore, using abnormal accruals as a proxy of earnings quality result with an inconsistent measure of earnings quality across alternative earnings metrics that include I/B/E/S earnings, S&P Core Earnings and cash flows from operations. Consequently, I use a stock returns measure of exposure to low quality earnings, proposed by Ecker *et al.* (2006), to proxy for exposure to earnings quality. I argue that a measure that captures investors' perceptions of earnings quality and their sensitivity to poor quality earnings will impact on the value relevance of alternative measures of earnings that are perceived to be more credible or more reliable. Additionally, this measure does not require explicit identification of adjustments performed by analysts in I/B/E/S earnings. Other advantages of this measure include fewer sampling restrictions and that it can be linked directly to the quarterly earnings announcement date in my sample to capture investors' perception of earnings quality at that time. My study contributes to the literature by providing insights on the effect of exposure to earnings quality on the comparative value relevance of GAAP and non-GAAP earnings.

As discussed above, security analysts and credit rating agencies face different incentives. Credit rating agencies have stronger incentives to be conservative, relative to equity analysts, as their products are used to assess credit risks (Tang, 2009; Batta and Muslu, 2010). On the other hand, there are incentives for managers to be conservative in their reporting choices to minimise agency costs and litigation risk. Given the GFC and its impact on the financial markets, investors' perceptions of information risk and conservatism may impact on the relative emphasis they place on alternative measures of earnings. This provides a unique opportunity to examine the effects of conservatism on the value relevance of alternative earnings measures and the effects of the GFC. As noted previously, prior studies examining the value relevance of GAAP and non-GAAP earnings do not control for the level of conservatism. Givoly and Hayn (2000) report an increase of conservative financial reporting over the period from 1950 to 1998. Lobo and Zhou (2006) find that post-SOX, firms are more conservative in their financial reporting. More recently, Watts and Zuo (2012) report that during the GFC more conservative firms perform better, i.e., experience less negative returns than less conservative firms during the GFC. These findings suggest that the level of conservatism may be value relevant and may impact on the emphasis investors place on alternative earnings measures. My study contributes to the literature by providing insights into the impact that conservatism may have on the value relevance of GAAP and non-GAAP earnings. In my study, I control for both unconditional and conditional conservatism.

Second, I examine the comparative value relevance of GAAP and non-GAAP earnings using four alternative samples: (1) firms included in the financial sector; (2) firms not included in the financial sector; (3) firms included in the S&P 500 index; and (4) firms not included in the S&P 500 index. A key trigger of the GFC was the crisis in the financial sector where the quality and reliability of financial information has since been shown to be questionable. This trigger in the financial sector also indicates that investors' emphasis on earnings is likely to be different to other industries, which subsequently experienced the impact of the GFC. Watts and Zuo (2012, p. 11) suggest that "a salient feature of the global financial crisis is a loss of liquidity in the banking system," which adversely affected firms as banks restricted lending. This implies that the loss of liquidity affected the financial sector initially and the non-financial sector subsequently. Therefore, examining the value relevance and informativeness of GAAP and non-GAAP earnings on firms included, or excluded, from the financial sector separately may provide further insights on the relative emphasis investors place on these earnings. I expect to find different results between firms in the financial sector and firms not in the financial sector. Therefore, my study contributes to the literature by investigating separately firms included in the financial sector and firms not included in the financial sector; this has been largely unexamined in the literature.

My study is not restricted to firms included in the S&P 500. In addition to financial and non-financial firms, I also separately examine the comparative value relevance of

GAAP and non-GAAP earnings on large and small firms. Albring *et al*. (2010) study large firms; however, they did not investigate small firms. Large firms, by virtue of size, generally have more publicly available information relative to small firms, which may impact how investors value the different measures of earnings. For example, large firms tend to have more analysts following them and more media coverage. In contrast, there may be limited alternative sources of information for smaller firms, which may impact the reliance and relevance that investors place on GAAP earnings, a mandated source of information irrespective of size. Therefore, I expect to find different results for large and small firms. No other study investigates the impact of firm size on the value relevance and informativeness of GAAP and non-GAAP earnings in the pre- and post-GFC periods. My study aims to fill this gap and contribute to the literature.

Third, my study investigates whether the GFC had an impact on the value relevance of GAAP earnings relative to non-GAAP earnings. The GFC offers a unique opportunity to investigate how investors may manage the trade-offs between the reliability of GAAP earnings and non-GAAP earnings. Research conducted before the GFC generally finds that non-GAAP earnings are significantly more value relevant and informative relative to GAAP earnings (Bradshaw and Sloan, 2002; Bhattacharya *et al*., 2003; Doyle *et al*., 2003; Lougee and Marquardt, 2004). However, the increased uncertainty and volatility in capital markets during and after the peak of the GFC suggest that investors may not only be seeking better quality information but also more reliable and credible information, which are the stated advantages of financial statements prepared using GAAP. Specifically, there is a potential for significant information asymmetry in the market during the GFC, which would lead to increased information risk. Investors have incentives to seek information from alternative sources to mitigate information risk. These alternative sources include financial information from security analysts, credit rating agencies and mandated financial reporting. Notwithstanding that this information may be biased, i.e., analysts, credit rating agencies and managers have incentives to disclose private information. Consequently the relative emphasis that investors place on these different measures of earnings may be affected by the extreme conditions during the GFC relative to the pre-GFC period. Also, as the peak of the GFC passes, investors' relative emphasis on earnings may change as the market becomes more settled. As noted previously, the market prices information risk. As a consequence, investors may place greater emphasis on GAAP earnings in periods of uncertainty. Furthermore, annually reported GAAP earnings (filed with the SEC in 10-K annual reports) are subject to an audit, which provides reasonable assurance that they are fairly presented in accordance with the GAAP reporting framework (Public Company Accounting Oversight Board, 1988; Securities Exchange Act of 1934). Although quarterly GAAP based financial statements (filed with the SEC in 10-Q quarterly reports) are not required to be audited, at a minimum, quarterly GAAP financial statements must be reviewed, which provides limited assurance that the quarterly financial information is fairly presented in conformity with GAAP (Public Company Accounting Oversight Board, 2002; Securities Exchange Act of 1934). Non-GAAP earnings reported by alternative sources do not have the same requirements to be audited or reviewed, therefore, no assurance is provided on non-GAAP earnings. Therefore, I investigate whether there is a shift in investor focus from non-GAAP to GAAP earnings during and after the peak of the GFC. No prior research has investigated the value relevance of GAAP and non-GAAP earnings in the post-GFC period relative to the pre-GFC period.

Finally, my study adopts a more comprehensive approach to investigate the comparative value relevance of GAAP and non-GAAP earnings. Prior studies generally use a single measure of GAAP earnings to compare with street earnings, typically I/B/E/S earnings. In this study, I compare several alternative measures of earnings. These earnings measures include two alternative measures of GAAP earnings (earnings from operations adjusted to exclude special items and income before extraordinary items, which are used separately in prior studies), I/B/E/S earnings, Standard & Poor's core earnings, cash earnings and operating cash flows. I explicitly test the value relevance of these measures and provide a more comprehensive examination of their comparative value relevance. Therefore, another contribution of my study is to further examine the value relevance of earnings measures published by a credible third party such as a credit rating agency. A credit rating agency is in a unique position as an information provider in that it not only produces an alternative measure of earnings but it also issues credit ratings for firms. Credit rating agencies, unlike analysts, are more concerned with firms' going concern positions than analysts. These credit ratings signal firms' credit worthiness and have implications for firms' future performance and their management of debt. As such, credit rating agencies are likely to be more conservative and more risk averse than analysts (Batta and Muslu, 2010) and, therefore, are likely to measure earnings more conservatively than managers. In 2001, Standard & Poor's proposed its core earnings measure as an alternative to GAAP earnings. Their core earnings represents a measure favoured by the credit agency. Furthermore, it allows a comparison against alternative measures of earnings as the method of measuring core earnings is defined explicitly (Blitzer *et al*., 2002).

1.3 ORGANISATION OF THE THESIS

The rest of this thesis is organised as follows. In Chapter 2, I present the background and review of the literature, and the research design of the study. It explains the empirical models to test the value relevance and information content of alternative earnings measures. I discuss the theoretical framework and the choice and specification of the variables I include in the models. Chapter 2 also provides an overview of the literature in the three areas of information asymmetry, earnings quality and conservatism and details the underlying theoretical framework and research method to examine their impact on the value relevance of GAAP and non-GAAP earnings. Finally, it explains the sample selection and data collection process. In Chapter 3, I present the results of the Ohlson (1995; 1999) valuation model to test the value relevance of the alternative earnings measures. In Chapter 4, I present the results of the Cumulative Abnormal Returns (CAR) model to test the information content of the alternative earnings measures. I discuss the results of each model in their respective chapter. In Chapters 5 through 7, I present the results for the examination of the impact of information asymmetry, earnings quality and conservatism on the value relevance of the alternative earnings measures, respectively. They provide the results of the analyses and discussion of the findings. In Chapter 8, the final chapter, I summarise the thesis and presents my conclusions. It highlights the significant research findings of the study and its contribution to the literature. I also identify the limitations of the study and potential opportunities for future research.

CHAPTER 2

LITERATURE REVIEW AND RESEARCH DESIGN

2.1 INTRODUCTION

This chapter describes the background and presents the literature review for this study. It also describes the research design and identifies the research questions I address. In Section 2.2, I discuss the background of my study and review the literature on the key areas, which are the value relevance and informativeness of GAAP and non-GAAP earnings and the impact of the GFC. I discuss the role of information asymmetry, earnings quality and conservatism and their impact on the value relevance of these alternative measures of earnings in the wake of the GFC. I also identify the research questions of my study and provide an overview of my research design. Section 2.3 describes the empirical models used in my study. My base model is the Ohlson (1995; 1999) valuation model, which measures the value relevance of earnings. Other empirical models I use include a cumulative abnormal returns (CAR) model to measure earnings informativeness, an information asymmetry index to measure information asymmetry (Maskara and Mullineaux, 2011), e-loading to measure earnings quality (Ecker *et al*., 2006), and conditional conservatism and unconditional conservatism models to measure conservatism (Basu, 1997; Beaver and Ryan, 2005). Section 2.4 explains the partitioning of the sample period into three period windows to examine the impact of the GFC. The three windows are pre-GFC, GFC and post-GFC. Section 2.5 explains the sample selection. My sample comprises publicly traded firms over the period 2002 to 2012 and the required data are obtained from Compustat, I/B/E/S, and CRSP.

2.2 BACKGROUND AND LITERATURE REVIEW

2.2.1 GAAP and Non-GAAP Earnings

It is well documented that stock prices are closely related to earnings performance, and that earnings are generally superior in explaining stock prices relative to cash flows (Dechow, 1994; Sloan, 1996). Furthermore, there is increasingly greater emphasis on non-transitory earnings as a more informative measure of earnings performance. In this regard, research shows that non-GAAP earnings measures are generally more value relevant than GAAP earnings measures (Bradshaw and Sloan, 2002; Brown and Sivakumar, 2003; Bowen *et al.*, 2005; Lougee and Marquardt, 2004). More recently, Defond and Hung (2003) argue that cash flows are incrementally useful and complement value relevant information contained in earnings. Their results suggest that cash flow forecasts are value relevant and provide market participants with an alternative source of information relative to earnings. Furthermore, cash flows are potentially less subjective than earnings due to the impact of accruals on earnings.

Studies investigating the value-relevance and informativeness of alternative earnings metrics to GAAP earnings generally focus on I/B/E/S earnings and pro forma earnings. More recently, however, researchers (Albring *et al.*, 2010; Batta and Muslu, 2010; Wieland *et al.*, 2013) have begun to investigate measures of earnings published by credit rating agencies. Credit rating agencies, similar to stockbrokers, financial analysts and the financial press, represent alternative sources of information used by stakeholders. Prior studies show that these sources provide information that is value relevant (Best and Zhang, 1993).

The trade-off between relevance and reliability, however, is an issue when a variety of information sources exist and when credible information (e.g., audited annual reports) is not available immediately. Atiase *et al.* (2005) show that while investors have a preference for reliability, it is possible that they may also seek relevant information from alternative credible sources that is not as reliable as audited financial information. Best and Zhang (1993, p. 1508) argue "that parties other than banks also perform evaluation and monitoring roles". Therefore, investors may seek information from other providers such as credit rating agencies that perform evaluation and monitoring roles (Vassalou and Xing, 2003).

Results from the few studies on the value relevance of earnings measures produced by credit rating agencies are mixed. Albring *et al.* (2010) investigate the value relevance of Standard & Poor's core earnings measure. They find that core earnings are more value relevant than GAAP earnings. Wieland *et al.* (2013) report results that support this finding. In contrast, Robinson *et al.* (2008, in Albring *et al.*, 2010, p. 268) report that "S&P core earnings are not a more useful measure relative to GAAP earnings." Batta and Muslu (2010) find evidence of conservatism in the non-GAAP earnings published by the credit rating agency Moody's and that these earnings are informative about the credit risk of underlying firms.

Firms can reduce information asymmetry confronting investors through the voluntary disclosure of information. The obvious implication of this is that management has vested interests in the information disclosed and the information is likely to be biased. On the other hand, agency theory also suggests that management has incentives to provide quality information because high quality information leads to better rewards. Therefore, it is not surprising that over a period of time prior to 2002, there was a documented increase in the release of pro forma earnings by firms (Bhattacharya *et al.*, 2003). However, a number of significant corporate collapses in the early 2000s raised questions about the quality of reported earnings and performance information as disclosed by firms in their pro forma earnings releases. This led to the SEC issuing cautionary advice regarding the use of "pro forma" financial information in earnings releases (Securities and Exchange Commission, 2001) and, in 2002, the SEC issued regulations on the use of non-GAAP earnings (Securities and Exchange Commission, 2002). In addition, the Sarbanes-Oxley Act (SOX) regulating financial reporting and corporate governance was enacted in the wake of the Enron scandal, which required higher standards of corporate governance. These regulatory changes mean that how corporate earnings are measured and disclosed are now under greater scrutiny.

Prior studies on the information content of accounting earnings and cash flows generally cover the period before 2002. Bhattacharya *et al.* (2003) reports an increase in pro forma earnings releases from 181 in 1998 to 695 in 2000. Since the SEC imposed new regulations on the use on non-GAAP earnings in 2002 (Securities and Exchange Commission, 2002), there has been a discernible shift away from pro forma earnings to a more conservative earnings metric that removes the effects of transitory earnings. This could be due to concerns about earnings management and managerial opportunism in respect to non-GAAP earnings. As firms may provide additional disclosures via pro forma earnings, these disclosures may be a tool for firms to influence stakeholders' perceptions of firm performance. Bowen *et al.* (2005) investigate the emphasis firms place on pro forma and GAAP earnings within quarterly press releases in the period 2001-2002 and find evidence that firms tend to place greater relative emphasis on pro forma earnings when they have less value relevant GAAP earnings. They also observe a shift in emphasis away from pro forma earnings between 2001 and 2002. Bhattacharya *et al.* (2007) find an increase in pro forma reporting from 1998 until 2001, but it decreased after 2001. There was a dramatic drop in the third quarter of 2002 coinciding with the enactment of SOX, which requires an explicit reconciliation between pro forma and GAAP earnings, in July of that year. Johnson and Schwartz (2005) find that investors, on average, do not appear to be misled by pro forma figures. This is consistent with Lougee and Marquardt (2004), who find that pro forma earnings have relative and incremental information content when GAAP earnings informativeness is low in their sample of firms that release pro forma earnings from 1997 to 1999. Unsurprisingly, they also find that firms emphasise the metric that portrays firm performance more favourably.

Interestingly, the findings of Bowen *et al*. (2005) that the level of emphasis on pro forma earnings decreased and the level of emphasis on GAAP earnings increased in 2002 relative to 2001 coincided with the greater scrutiny by the SEC following several corporate and accounting scandals. From a stock market perspective, their results show that pro forma earnings are value relevant. While there is some indication of value relevance in respect to emphasis on GAAP earnings, the results are weak.

The results from the various studies on pro forma earnings are consistent in showing that pro forma earnings and I/B/E/S earnings are more value relevant when compared to GAAP earnings (Bradshaw and Sloan, 2002; Doyle *et al*., 2003). While there has been a decline in pro forma earnings releases, there is evidence that there has been an increase in the quality of other exclusions, i.e., more transitory items, and a decrease in the quality of special items (Kolev *et al*., 2008). This suggests earnings management may not necessarily have decreased, but rather managers have changed the way they manage earnings from managing accruals to managing real activities (Roychowdhury, 2006) and classification shifting (McVay, 2006). Furthermore, with the exception of Albring *et al*. (2010), these studies typically focus on only two primary sources of information - information produced by analysts and management. Blitzer *et al*. (2002) argue that Standard & Poor's core earnings better represent permanent earnings. Whether this is so is an empirical question.

Studies provide evidence that the implementation of SOX is a pivotal moment in regulatory reform causing a reversion to more conservative reporting and greater awareness of potential earnings management. Lobo and Zhou (2006) provide evidence that, post-SOX, firms are, on average, more conservative (using the conservatism measure of Basu, 1997) in their financial reporting, i.e., firms are quicker to incorporate losses than gains when reporting earnings. They also report a significant reduction in discretionary accruals post-SOX relative to pre-SOX periods. Lobo and Zhou, however, did not test for value relevance.

An alternative explanation for the move towards a more conservative measure of earnings and away from non-GAAP earnings measure may be that market participants are seeking more credible information (Lobo and Zhou, 2006; Marques, 2006). Credit rating agencies, with incentives to be conservative, may be this alternative source of information. The core earnings measures advocated by Standard & Poor's may be perceived to be more credible and value relevant relative to other non-GAAP earnings. It can be argued that this core earnings measure is also more conservative and more closely reflects permanent earnings as the adjustments include items that are typically included in special items as well as those that are not generally accounted for under GAAP. Furthermore, S&P explicitly detail what these adjustments are. Blitzer *et al.* (2002) specify the adjustments to GAAP earnings when computing core earnings, which is defined as focused 'on a company's ongoing operations…(and) should include all the revenues and costs associated with those operations and exclude revenues or costs that arise in other parts of the business, such as unrealised gains or losses from hedging activities' (p. 5). Items such as employee stock option grant expense, restructuring charges from ongoing operations, and pension costs are included in computing core earnings. On the other hand, items such as goodwill impairment losses, gains/losses from asset sales, and unrealised gains/losses from hedging activities are specifically excluded from the computation of core earnings. Albring *et al.* (2010) report results consistent with this in their study of firms in the S&P 500 over the period 2002 to 2007. Wieland *et al.* (2013) also report similar finding after controlling for the implementation of FASB 123R, which requires that all employee stock option expense be recognised in the income statement effective from June 2005. Both studies find that Standard & Poor's core earnings are significantly more value relevant than GAAP earnings. Additionally Albring *et al.* (2010) also find that Standard & Poor's core earnings are significantly more value relevant than I/B/E/S earnings.

While prior studies indicate operating cash flows are inferior to earnings in explaining stock prices, Dechow (1994) and Defond and Hung (2003) provide evidence that operating cash flows are value relevant. These findings suggest that cash flows contain information that complement the information contained in earnings. As "cash flows are potentially less subjective than accruals…(they) help market participants assess firm viability by providing information about solvency and liquidity (Defond and Hung, 2003, p. 75). Also, the complementary information in cash flows is consistent with the evidence that investors may not comprehend fully the information presented in earnings and are subsequently surprised when non-recurring items recur in subsequent years, or when pro forma earnings miss earnings benchmarks (McVay, 2006; Lougee and Marquardt, 2004). If earnings measures that are less conservative than GAAP earnings can be used to mislead investors or are susceptible to earnings management, it is conceivable that more conservative earnings measures may have information content (Basu, 1997; Givoly and Hayn, 2000; Ryan and Zarowin, 2003).

At the extreme, cash flows represent the most conservative measure of performance – it reflects objective evidence that the transaction has occurred and cash transfers completed. Nevertheless, it is possible that under an accrual accounting system, "if unrealized losses but not unrealized gains are recognized, then earnings is more conservative than cash flow" (Basu, 1997, p. 16). Additionally, an alternative performance measure such as cash flows from operations, which is not subject to accruals manipulation, may also be value relevant as there is evidence that special items adjustments are related more with accruals than cash flows and that managers may be manipulating real activities to meet earnings targets or to avoid reporting annual losses.

In light of the GFC, I expect investors to seek increasingly more reliable and credible financial information. As mandatory GAAP earnings are required to comply with accounting regulations and to be audited, it is argued that they are more credible and reliable than non-GAAP earnings. Given the consistent findings that some non-GAAP earnings, such as I/B/E/S earnings, are superior to GAAP, it is unlikely that investors will disregard this information in their valuation decision. Rather, investors seeking more reliable and credible information may place relatively greater emphasis on GAAP earnings. Therefore, if investors perceive GAAP earnings to be more credible and reliable, I expect to observe incremental value relevance in GAAP earnings in the GFC and post-GFC periods relative to the pre-GFC period.

2.2.2 Information Asymmetry

Prior studies on information asymmetry have investigated its impact on numerous corporate events including the issue of new equity (Dierkens, 1991), capital structure decisions (Bharath *et al.*, 2009), disclosure quality (Heflin *et al.*, 2005), earnings quality (Bhattacharya *et al.*, 2013) and credit ratings (Odders-White, 2005). The relation between information asymmetry and the adverse selection problem is well established in the market microstructure literature (O'Hara, 1997; Stoll, 2000). The presence and actions (or inactions) of better-informed traders in the market have signalling implications and may affect price formation (Easley and O'Hara, 1992). Better-informed traders will act strategically and choose to trade, or not trade, to profit from their information advantage. Therefore, the level of information asymmetry can be estimated using observed market data. In the literature, proxies for information asymmetry are based on three cost components - order processing, inventory-holding and adverse selection costs. Proxies to measure these costs include bid-ask spreads, trading volume and asset returns.

Stoll (2000) argues that friction, in a financial market setting, is the price concession required for an immediate transaction. Therefore, the bid-ask spread represents one measure of friction, i.e., the price concession needed for the transaction to occur immediately. One view of the source of this spread is that real economic resources are expended (real friction) to enable immediate transaction. The bid-ask spread essentially represents compensation required by the parties to the transaction. An alternative view assumes the presence of information asymmetry (informational friction). Informed traders will buy (sell) at the ask (bid) price if they have superior information justifying a higher (lower) price. Therefore, informed traders will gain when the information becomes known subsequently. Consequently, uninformed traders "must pay a spread sufficient to compensate suppliers of immediacy for losses to informed investors" (Stoll, 2000, p. 1482). It follows that if the source of the spread is informational friction and not real friction (i.e., due to asymmetric information and not expending real economic resources), improvements in disclosures will reduce this spread. Stoll (2000) argues that real friction directly affects asset prices, however, informational friction redistributes wealth from the uninformed trader to the informed trader. Higher information asymmetry increases the adverse selection risk for capital market participants.

Based on prior studies, I define an environment of information asymmetry as "where managers of the firm know more about the firm than the market" (Dierkens, 1991, p. 182). Information asymmetry can lead to suboptimal contracting between parties to a transaction and misevaluation of assets. As managers have superior information and incentives to not reduce information asymmetry, regulation can mitigate this problem by requiring managers to fully disclose private information (Healy and Palepu, 2001). Conversely, managers also have incentives to voluntarily disclose information and signal to stakeholders in order to mitigate the problem of misevaluation. Note that such disclosures turn private information into public information, which reduces the risk to uninformed investors and lowers the risk premium required by these investors; Easley and O'Hara (2004) demonstrate that investors price information risk.

In the context of my study, there is relatively greater uncertainty and volatility in the GFC and post-GFC periods relative to the pre-GFC period. Business confidence is also generally lower in the GFC and post-GFC period. Such conditions indicate the potential for significant information asymmetry in the market. Such an economic environment can exacerbate misvaluation of assets and this may provide greater incentives for managers to disclose private information. While managers have incentives to bias these disclosures, the presence of regulation may mitigate this bias. GAAP mandated reporting of accounting earnings, and also regulations prescribing acceptable voluntary disclosures (e.g., Securities and Exchange Commission, 2001; Securities and Exchange Commission, 2002), ensure that there is a minimum level of disclosure as well as a certain level of credibility and reliability. There is evidence in the literature on both mandatory and voluntary disclosures indicating that these disclosures are value relevant and have information content.[5]

Notwithstanding the role of regulation, there is also a demand for information intermediaries (e.g., analysts and credit rating agencies) who are actively engaged in reducing information asymmetry, i.e., to "uncover manager's superior information" (Healy and Palepu, 2001, p. 408). Analysts tracking services (e.g., I/B/E/S) and credit ratings agencies (e.g., Standard & Poor's) generate their own definitions and measures of earnings to more closely reflect a firm's permanent earnings. Prior research in this area reports evidence that non-GAAP earnings are generally more value relevant and informative than GAAP earnings and are argued to reduce information asymmetry (Bhattacharya *et al*., 2003; Bradshaw and Sloan, 2002; Lougee and Marquardt, 2004).

During, and following, the GFC, it may be argued that the role of security analysts and credit rating agencies in the market have increased significance as stakeholders seek information to reduce uncertainty. However, security analysts and credit rating agencies are subject to moral hazard and adverse selection problems and have vested interests in the level and type of information they disclose to the market. Therefore, there is also a role for mandated disclosures of earnings based on GAAP, which provide credible and

[5] For a review of the literature, see Healy and Palepu (2001) and Beyer *et al*. (2010).

reliable information. If investors are seeking credible and reliable information to reduce information risk, they may place greater emphasis on GAAP earnings when information asymmetry is comparatively high. If so, I expect a positive relationship between information asymmetry and GAAP earnings.

2.2.2.1 *Measures of Information Asymmetry*

Prior studies employ a variety of measures of information asymmetry. These include market microstructure measures of information asymmetry that are designed to capture adverse selection risk (Bhattacharya *et al*., 2013; Huang and Stoll, 1996). That is, agents (informed traders, managers) have an informational advantage over the market. Therefore, measures of information asymmetry, such as bid-ask spreads and trading volume, proxy for adverse selection costs (i.e., the market's perception of the agents' informational advantage). However, these proxies are not without problems. Bollen *et al*. (2004, p. 103) note that "…the intuition underlying why adverse selection may be an important determinant of spread is clear, [but] the selection of an accurate measure of adverse selection costs is not." Bharath *et al*. (2009) argue that measures estimated with high frequency trade and quote data, or where there is scarce availability of this data, potentially limits the use of these measures. On the other hand, Easley and O'Hara (1992) suggest that an absence, or lack, of trades also conveys information to the market, which is that there is no *new* information.

Other measures of information asymmetry include analysts' forecast errors, standard deviation of forecasts, dispersion of analyst opinion, normalised forecast error, and volatility in abnormal returns around earnings announcement (Krishnaswami and Subramaniam, 1999; Krishnaswami *et al*., 1999; Maskara and Mullineaux, 2011; Bharath *et al*., 2009; Dierkens, 1991).

Firms with higher levels of information asymmetry are expected to have larger analysts' forecast errors and higher levels of standard deviation, which suggest a lack of agreement among analysts and are indicative of a lack of information about the firm. Krishnaswami and Subramaniam (1999) suggest that larger forecast errors for some firms may be due to earnings that are more volatile and correlated with firm risk, i.e., the forecast errors may not necessarily be due to higher levels of information asymmetry. Consequently, an alternative measure of information asymmetry is the normalised forecast error, which controls for the correlation between earnings volatility and forecast errors. Normalised forecast error is defined as the ratio of the earnings forecast error to the earnings volatility of the firm. Other measures of information asymmetry include volatility in abnormal returns around earnings announcement and residual volatility in daily stock returns.

There is no consensus on the optimal measure of information asymmetry. Prior studies have highlighted weaknesses of market microstructure proxies of information asymmetry (Bharath *et al*., 2009; Bollen *et al*., 2004; Easley and O'Hara, 2004). Other measures, such as analysts' forecast errors suffer from errors in variables problem, where forecast earnings are measured using a different metric to actual earnings (Cohen *et al*., 2007). More recent studies have formed composite indices based on common information asymmetry benchmarks, or adverse selection variables to avoid problems of using a single measure. Bharath *et al*. (2009) create a composite index based on market microstructure measures of information asymmetry to investigate the impact of information asymmetry on capital structure decisions. They conclude that their index performs well after controlling for other information asymmetry measures including size, tangibility of assets, and firms' sources of funding.

Maskara and Mullineaux (2011) investigate self-selection bias in bank loan announcement studies using a composite index based on six commonly used information asymmetry measures. Their measures include market microstructure (e.g., bid-ask spreads) and non-market microstructure (e.g., analysts' forecast errors, firm age) measures. In untabulated results, Maskara and Mullineaux (2011) report that their composite index performs marginally stronger than using bid-ask spread, trade and quotes database measure, or private information (PIN) measures of information asymmetry. I adopt their composite index measure of information asymmetry in my study.

2.2.3 Earnings Quality

The literature that examines the quality of reported earnings is extensive and continues to grow. Over the past two decades, there have been several reviews of this literature (Fields *et al*., 2001; Healy and Wahlen, 1999). More recently Dechow *et al*. (2010) provide a comprehensive review of the earnings quality literature. Additionally, DeFond (2010) provides further insights that complement Dechow *et al*. (2010). While much of the research focuses on earnings management and its impact on the quality of reported earnings, studies also investigate the quality of reported earnings in equity valuation, the characteristics of earnings quality and proxies that measure earnings quality.

There are a few studies, however, that specifically investigate the comparative earnings quality of street earnings with GAAP earnings. Gu and Chen (2004) investigate the relative persistence of nonrecurring items included and excluded by analysts when computing street earnings. Their sample is drawn from First Call, an alternative security analyst tracking service to I/B/E/S, and covers the period 1990-2002. They find evidence that street earnings are of higher quality than GAAP earnings and conclude that items included in street earnings more closely resemble permanent earnings while items excluded more closely resemble transitory earnings. Nevertheless, they also find evidence that excluded items still have some value relevance and persistence, indicating that the market reaction to these items may be incomplete. Bhattacharya *et al*. (2003) investigate the relative informativeness and permanence of pro forma and GAAP earnings. They examine firms that release pro forma disclosures over the period 1998 to 2000 and find that pro forma earnings are more persistent and more informative than GAAP earnings. These results suggest that pro forma and analysts' measures of earnings are more persistent than GAAP earnings. To the extent that more persistent earnings reflect higher earnings quality, there is some evidence that certain non-GAAP earnings are of higher quality relative to GAAP earnings.

There is some evidence to suggest that in a time of crisis, investors become more focused on the quality of earnings (Francis *et al*., 2013; Mitton, 2002). Furthermore, investors' demand for reliable and credible information in an uncertain economic environment suggests that they that may also become more focused on GAAP earnings in comparison to when the economy is not in crisis. The fundamental characteristics of GAAP that make GAAP earnings credible and reliable, e.g., the requirement to be audited and conservatism, remain. Investors seeking reliable and credible information because of the economic conditions of the GFC may shift, or increase their focus, to GAAP earnings when GAAP earnings quality is high. Therefore, I expect to find GAAP earnings to be incrementally value relevant in the GFC and post-GFC periods relative to the pre-GFC period when GAAP earnings quality is high. Furthermore, when GAAP earnings quality is low, it may also be value relevant to investors as low earnings quality may proxy for information risk. Therefore, I expect low earnings quality to be negatively associated with firm value.

The definition of earnings quality, however, is broad and is predicated by the research question and the context of a study. Measures in the literature that proxy for earnings quality include accruals (Dechow and Dichev, 2002; Jones, 1991), stock returns (Ecker *et al.*, 2006) and unexpected audit fees (Hribar *et al.*, 2014). It is unlikely, however, that there is a measure of earnings quality that is superior to all other measure, nor is there a measure that is suitable for all research settings (Dechow *et al.*, 2010; Ecker *et al.*, 2006).

2.2.3.1 Measures of Earnings Quality

In the context of my study, I investigate whether the GFC and earnings quality impact on the value relevance of GAAP and non-GAAP earnings. I define earnings quality as the extent to which accruals map into cash flows (Bhattacharya *et al.*, 2013; Ecker *et al.*, 2006). There are, however, several measures of earnings quality proposed in the literature.

A common proxy of earnings quality is the measure of discretionary or abnormal accruals (Dechow and Dichev, 2002; Jones, 1991). This approach poses two problems in relation to my study. First, it requires a firm's accruals as input into the accruals model. In the case of I/B/E/S, the actual adjustment to accruals to obtain the earnings measure is ambiguous, as noted in Section 2.3.1 below. Second, operating cash flows, by definition, does not include accruals. Therefore, this approach cannot be applied consistently across all measures of GAAP and non-GAAP earnings and it will not lead to a meaningful comparison of the impact of earnings quality on the value relevance of the alternative earnings metrics.

Hribar *et al.* (2014) propose an alternative approach to measuring earnings quality. They use unexplained audit fees as a proxy for earnings quality; the unexplained audit fee is estimated from an audit fee model. However, the audit fee model is incomplete by design, i.e., they deliberately exclude measures of accounting quality, to capture accounting quality and its association with audit fee in the model's residuals. They argue that "a positive association between unexplained audit fees (UAF) and low quality accounting information will exist in the cross-section of firms, based on the endogeneity of audit fees with respect to accounting quality" (Hribar *et al.*, 2014, p. 507). When confronted with low accounting quality (i.e., relatively high inherent risk), auditors will increase the scope of their audit resulting with higher audit fees. After controlling for factors that affect audit fees but are unrelated to accounting quality, Hribar *et al.* (2014) report that UAF is positively related to other empirical measures of accounting quality found in the literature.

In my study, I use quarterly data in my sample. Generally, quarterly earnings are unaudited. The use of an annual audit fees model will be a noisy measure of earnings quality for quarterly observations. Also, as earnings measures from security analysts tracking services and credit rating agencies are not subjected to the audit process, this approach does not measure the earnings quality of these measures of earnings.

Ecker *et al*. (2006, p. 750), building on the work of Francis *et al*. (2005), propose a novel approach to measuring earnings quality that is returns-based, which is the "...slope coefficient from a regression of a firm's daily excess returns in year T on a factor-mimicking portfolio capturing earnings quality". First, they map current accruals into last year, current and next year cash flows, consistent with Dechow and Dichev (2002), and obtain a measure of accruals quality. Adopting a factor-mimicking portfolio approach (Fama and French, 1993; Francis *et al*., 2005), they create an accruals quality factor-mimicking portfolio, which they denote as AQfactor, using daily returns to estimate the asset-pricing regressions. This portfolio approach essentially generates a measure of accruals quality that is time-specific, i.e., a daily measure of accruals quality. Then, AQfactor is added as an independent variable in the one-factor and three-factor regressions of a firm's daily excess returns. Ecker *et al*. (2006) argue the AQfactor coefficient, which they term the e-loading, in these regressions captures investors' perceptions of earnings quality exposure in the same way that the beta from the Capital Asset Pricing Model (CAPM) captures exposure to market risk. The e-loading is inversely related to earnings quality. They perform additional tests, including a construct validity analysis, that suggest their results are robust. While they measure the e-loading over a year, their analysis indicates that it can also be measured over quarterly intervals.

Of the various measures of earnings quality discussed above, the returns-based approach, or e-loading, offers several advantages in the context of my study. First, my comparison of the value relevance of the alternative earnings metrics focuses on a measure of total earnings, which are the net earnings that are argued to represent recurring earnings. My study does not address discretionary or abnormal accruals, or the quality of these accruals. I do, however, recognise that the composition of these alternative earnings metrics are different, that is, the adjustments to obtain GAAP and non-GAAP earnings are not identical. Therefore, a measure that captures investors' perceptions of earnings quality is appropriate for my study. Specifically, investors' perceptions of earnings quality and their sensitivity to poor quality earnings will impact on the value relevance of alternative measures of earnings that are perceived to be more credible or more reliable.[6]

Second, e-loading imposes fewer sampling restrictions; it only requires sufficient observations of returns data to compute. Ecker *et al*. (2006) demonstrate that e-loading can be calculated and reliably capture earnings quality over quarterly intervals with 45 daily returns. Therefore, my tests are not constrained by using annual measures on quarterly earnings data.

Finally, e-loading is estimated based on time-specific measure of AQfactor. Therefore, the AQfactor can be linked directly to the quarterly earnings announcement date in my sample to capture investors' perception of earnings quality at that time.

Note that e-loading is estimated based on AQfactor, which is a measure of accruals quality based on GAAP earnings. Therefore, consistent with my arguments in the previous section, I expect a shift in investors' emphasis towards GAAP earnings between the pre-GFC period and the GFC and post-GFC period when e-loading is low (i.e., low exposure to low quality earnings, which indicates high earnings quality). Conversely, when e-loading is high (i.e., high exposure to low quality earnings, which indicates low earnings quality), I expect GAAP earnings to be negatively associated with firm value, as investors may penalise the firm for increased information risk.

2.2.4 Conservatism

Conservatism is an important accounting concept in financial reporting. There is, however, no authoritative definition of conservatism (Givoly *et al*., 2007). A textbook definition generally suggests asymmetric treatment of accounting for transactions where doubts and several possible reporting alternatives exist. An alternative definition of conservatism is that the book value of assets (or net assets) is understated relative to their market value.

The literature on conservatism identifies two types of conservatism – unconditional conservatism and conditional conservatism. Unconditional conservatism is "an accounting bias toward reporting low book values of stockholder equity" and conditional conservatism is "conditional on firms experiencing contemporaneous economic losses" (Ball and Shivakumar, 2005, p. 89). This suggests that, in the latter,

[6] Francis *et al*. (2005) find that poorer accruals quality, as used by Ecker *et al*. (2006), is associated with larger cost of equity and that the market prices accrual quality.

conservatism is conditioned by the sign of the income effect (i.e., timely recognition of a loss) and that there is an asymmetric treatment in the recognition of losses and gains in the income statement.

As the economic characteristics of the GFC include volatility and uncertainty in relation to asset values, it offers a unique opportunity to examine the effects of conservatism on the value relevance of alternative earnings measures and the effects of the GFC. As noted previously, most prior studies examining the value relevance of GAAP and non-GAAP earnings use sample data from before 2006 and do not examine the impact of the GFC.

Watts and Zuo (2012) examine the effects of conservatism on firm value during the GFC for a sample of non-financial US firms. They defined the period from 1 August 2007 to 31 August 2009 as the crisis period based on abnormally high 3-month spread between the London Interbank Offered Rate (LIBOR) and an overnight indexed swap (OIS), which is an indicator of bank default risk. They report that during the GFC, the market value of an average firm fell by around one-third. They also find that more conservative firms perform better, i.e., experience less negative returns, than less conservative firms during the GFC. These findings suggest that the level of conservatism may be value relevant and may impact on the emphasis investors place on alternative earnings measures.

There is also evidence that conservatism has increased over time. Givoly and Hayn (2000) report an increase of conservative financial reporting over the period from 1950 to 1998. Their measures of conservatism include "the level and rate of accumulation over time of negative non-operating accruals; measures based on the earnings-return association during periods of good and bad news; measures based on the time-series properties of earnings and cash flows; and the market-to-book ratio (Givoly and Hayn, 2000 p. 294). Lobo and Zhou (2006) argue that SOX significantly changes the potential legal liability of managers for inaccurate financial reporting. Therefore, managers are less likely to adopt aggressive financial reporting to mitigate the potential exposure to legal liability after the implementation of SOX. Lobo and Zhou (2006) find that post-SOX, firms are more conservative in their financial reporting.

The GFC resulted in a period of relatively high uncertainty and volatility leading to decreased investor confidence. Under agency theory and information asymmetry, there are incentives for managers to overstate the value of net assets in order to maximise their welfare. Conversely, there are also incentives for managers to be conservative in their reporting choices to minimise agency costs and litigation risk (Francis *et al.*, 2013; Watts and Zuo, 2012). Also, Watts (2003) argues that conservatism, through its asymmetric treatment of gains and losses, may increase firm value as it limits managements' opportunistic behaviour and offsets its bias.[7] Francis *et al.* (2013) investigate the impact of conservatism on firm value during the GFC. They report results showing a strong positive association between conservatism and firm value. This suggests that conservatism may be value relevant.

The conservatism principle has long influenced the practice of accounting (Basu, 1997). In Statement of Financial Accounting Concepts (SFAS) No. 2, the Financial Accounting Standards Board (FASB) recognises a place for conservatism, however, it argues that it "needs to be applied with care" (Financial Accounting Standards Board, 2008 para. 92). SFAS No. 2 was subsequently superseded by SFAS No. 8. While there is some debate over whether the conservatism principle contradicts the fundamental qualitative characteristic of faithful representation in SFAS No. 8, the FASB states that this principle is not an aspect of faithful representation (Financial Accounting Standards Board, 2008 para. 92). Nevertheless, in SFAS No. 8, the Financial Accounting Standards Board (2010, p. 28) acknowledges the view that:

> *...bias should not always be assumed to be undesirable, especially in circumstances when bias, in their view, produces information that is more relevant to some users. Deliberately reflecting conservative estimates of assets, liabilities, income, or equity sometimes has been considered desirable to counteract the effects of some management estimates that have been perceived as excessively optimistic.*

Ultimately, compliance with GAAP means adhering to the overall requirements of GAAP and being subject to the penalties imposed for breaching these requirements. Security analysts and credit agencies, however, are not required to comply with GAAP when computing their alternative measures of earnings. In fact, it is argued that these alternative measures are superior because they are not constrained by GAAP requirements (e.g., Blitzer *et al.*, 2002).

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[7] Some early studies report findings that indicate a decline in the value relevance of earnings over time. See Healy and Palepu (2001) for a review of these studies. Also, Lev and Zarowin (1999) report results that suggest conservative accounting for research and development expenditure are associated with a greater decline in value relevance. More recently, however, Balachandran and Mohanram (2011) report results that do not support these earlier findings.

As one aim of GAAP and SOX is to improve the accuracy and credibility of financial reporting, investors may view the conservatism principle embodied in GAAP earnings as relatively more accurate and credible during periods of uncertainty (Watts, 2003). Specifically, Kothari *et al.* (2010, p. 256) argue that "Conditional and unconditional conservatism signify a trade-off under which relevant information about management achievements is deemphasized in order to provide a more prudent and reliable performance measure. External auditing of financial reporting helps mitigate the trade-off." Therefore, GAAP earnings may have incremental value relevance relative to non-GAAP earnings in the GFC and post-GFC periods where there are relatively greater levels of uncertainty in the market.

In the context of my study, this effect is also conditioned by non-GAAP earnings. While managers may adhere to the conservatism principle in reporting GAAP earnings, these earnings may not be the most conservative, i.e., lowest value, earnings information available to investors. Generally, I/B/E/S earnings and S&P core earnings produce lower values of earnings in comparison to GAAP earnings due to the adjustments in measuring these non-GAAP earnings. That is, these non-GAAP earnings measures exclude non-recurring revenue and include recurring expenses even when these items may not be treated as such by a firm under GAAP. On the other hand, non-GAAP earnings are not required to comply with GAAP, therefore, they may not be perceived to be as credible as GAAP-mandated earnings. If non-GAAP earnings are lower than GAAP earnings and are value relevant, as prior studies suggests, then there may be a confirmation effect where the level of conservatism in GAAP earnings confirms investors' expectation. In which case, I do not expect to find significant results for GAAP earnings. On the other hand, if investors find GAAP earnings to be more credible and reliable, I expect GAAP earnings to be incrementally value relevant and be associated with firm value even where it is less conservative in comparison to non-GAAP earnings.

2.2.4.1 Measures of Conservatism

Unconditional conservatism reflects a bias in reporting low book values of assets. This is often defined as the difference between the market value of net assets and the book value of net assets. This measure of unconditional conservatism is generally stated as a ratio. A commonly used measure of unconditional conservatism is the firm's market to book ratio (Beaver and Ryan, 2000; Givoly and Hayn, 2000; Beatty *et al.*, 2008;

Roychowdhury and Watts, 2007). A larger ratio indicates more conservative accounting.

Several measures of conditional conservatism have been proposed in the literature. These include the asymmetric timeliness measure (Basu, 1997), accumulated accruals (Givoly and Hayn, 2000), conservatism ratio (Callen *et al*., 2010) and C_Score (Khan and Watts, 2009).

Basu (1997) models conditional conservatism as the timeliness with which events with expected unfavourable outcomes (bad news) are recognised in earnings relative to events with favourable outcomes (good news). The type of news is identified through the sign of the returns for the period. That is, negative returns signify bad news and positive returns signify good news. Conditional conservatism means bad news is recognised on a timelier basis than good news. He uses a reverse regression model where earnings, deflated by beginning stock price is regressed on a dummy variable for negative stock returns, stock returns and the negative stock returns dummy variable interacted with the stock returns variable. Of interest is the coefficient of the interaction term in the model. Often referred to as the asymmetric timeliness coefficient, it measures how timely bad news is recognised relative to good news. A positive coefficient indicates conditional conservatism, i.e., bad news is recognised on a timelier basis than good news.

Givoly and Hayn (2000, p. 292) argue that a measure of conservatism is the "…sign and magnitude of accumulated accruals over time." They contend that as accruals reverse over time, consistent negative accumulated accruals over a long period of time indicate conservatism. Furthermore, the accumulation rate of these negative accruals indicates the shift in the level of conservatism.

Callen *et al*. (2010) develop the conservatism ratio, which is a market measure. This measure is defined as the "…ratio of unexpected current earnings to total earnings news" (Callen *et al*., 2010, p. 155). They argue that the more unexpected earnings, which they refer to as news shock, are recognised in current earnings, the more conservative is the firm. This is based on the premise that the news shock is a market revision of expected future cash flows in response to the news. Furthermore, as this ratio is expected to be closer to one when the news shock is negative than when the news shock is positive, it is consistent with the notion of asymmetric treatment of gains and losses in Basu (1997).

Khan and Watts (2009) construct a conservatism measure, which they refer to as C_Score, which is based on the asymmetric timeliness measure of Basu (1997). They argue, however, that the asymmetric timeliness measure (the coefficient of the interaction in Basu's model) is a "...linear function of firm-specific characteristics each year" (Khan and Watts, 2009, p. 136). The firm-specific characteristics they include in the measure of C_Score are size, market-to-book ratio, size and leverage. While C_Score purports to measure conservatism at a firm-specific level, its use in the literature has been relatively limited.

Basu (1997) continues to be the most widely used measure of those discussed above[8]. Some studies, however, question the validity of Basu's asymmetric timeliness measure. Dietrich *et al*. (2007) argue that the research design of Basu (1997) is weak and that the econometric properties of the model lead to substantial bias in the results, such as when earnings information has an effect on returns. Also, Patatoukas and Thomas (2011) contend that the asymmetric timeliness measure is biased due to within-sample variation in scale-related effects rendering the measure unreliable. Givoly *et al*. (2007, p. 65) find that Basu's measure suffers from measurement errors and that it is sensitive to factors including "...degree of uniformity in the content of the news during the examined period, the types of events occurring in the period, and firms' disclosure policies."

While these criticisms have some merit, they apply primarily to research contexts that investigate cross-sectional conservatism using pooled data. That is, conservatism is not measured at a firm-year (or firm-quarter) level, with the exception of Khan and Watts (2009). Recently, Ball *et al*. (2013) address these criticisms and provide alternative explanations and alternative approaches to overcome the weakness in the Basu model. They identify that the bias is largely due to cross-sectional correlations. They suggest three alternative approaches to correct for the bias – add a control variable in the regression model to control for expected earnings and expected returns, use an auto-regressive expectations model to estimate unexpected earnings, and control for firm fixed effects. They first replicate the results of prior studies reporting bias in the Basu measure and then demonstrate that these approaches successfully correct for the reported biases.

In the context of my study, I require a firm-quarter measure of conservatism. I use the market-to-book ratio as a measure of unconditional conservatism at the firm level. In

[8] Ryan (2006) and Givoly *et al*. (2007) provide an extensive list of studies that use (Basu, 1997).

relation to conditional conservatism, there is currently no reliable firm-specific measure of asymmetric timeliness.[9] (Ryan, 2006, p. 512) notes "(s)uch measures are currently not available and are desperately needed in order to address many research questions empirically". The various available measures of conservatism possess varying degrees of limitations. While the C_Score of Khan and Watts (2009) is a firm-year measure of conditional conservatism, it is also based on Basu (1997) and is subject to similar limitations of the asymmetric timeliness measure as discussed above.

In the absence of a clear reliable measure of conditional conservatism, it is an arbitrary decision to select the measure to use. In my study, I adapt and use the asymmetric timeliness measure of Basu (1997). It remains a widely-used measure of conditional conservatism and an approach of estimating the model on a firm basis mitigates the cross-sectional bias identified in prior studies. The details of the estimation of this measure are discussed in Section 2.3.5. As an overview, I estimate the regression model for each firm in my sample using time series in order to derive a firm-specific measure of conservatism for each quarter. Also, this will remove the cross-sectional bias and is consistent with controlling for firm fixed effect as suggested in Ball *et al*. (2013).

2.2.5 Summary

Extensive research has been conducted in the area of information asymmetry, earnings quality and conservatism. Several studies that review the development and issues addressed in these areas include Healy and Palepu (2001), Beyer *et al*. (2010) and Dechow *et al*. (2010). While the superiority of non-GAAP earnings over GAAP earnings is well-established in the literature, there are still gaps in the literature. Specifically, studies examining the value relevance and information content of GAAP earnings relative to non-GAAP earnings do not investigate the impact of information asymmetry, earnings quality or conservatism on these alternative earnings measures. Furthermore, the majority of these studies use data from before 2008 and do not examine the impact of the GFC. I aim to bridge this gap by examining these factors that have been largely ignored in the literature on the value relevance of GAAP and non-GAAP earnings. Lougee and Marquardt (2004) is an exception that tests whether the information content of pro forma earnings is systematically associated with GAAP earnings informativeness.

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[9] Ryan (2006) provides a critique of the measures of conditional conservatism and approaches to overcome the limitations in these measures.

This leads to the following research questions:

RQ1: *What is the impact of the Global Financial Crisis on the value relevance of GAAP and Non-GAAP earnings?*

RQ1a: *What is the impact of the Global Financial Crisis on the information content of GAAP and Non-GAAP earnings?*

RQ2: *What is the impact of information asymmetry on the comparative value relevance of GAAP and Non-GAAP earnings?*

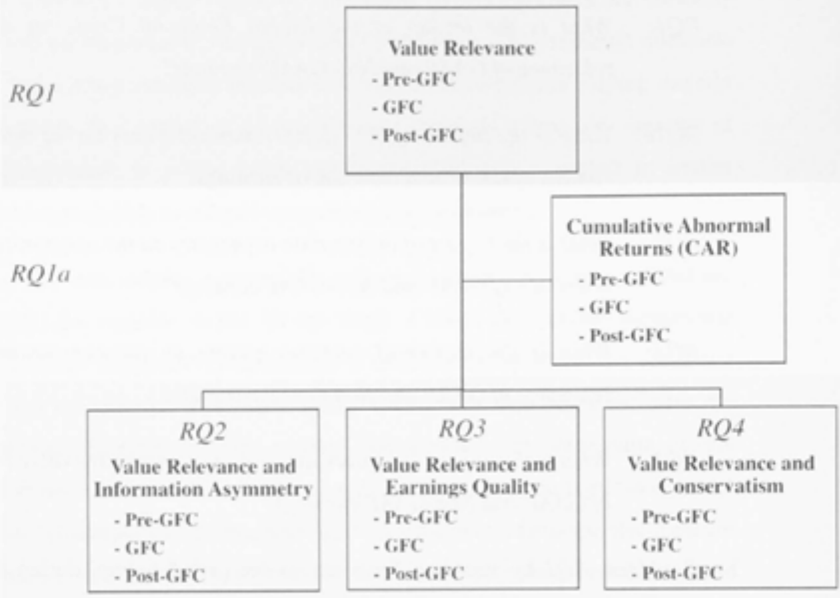
RQ3: *What is the impact of earnings quality on the comparative value relevance of GAAP and Non-GAAP earnings?*

RQ4: *What is the impact of conservatism on the comparative value relevance of GAAP and Non-GAAP earnings?*

I will address *RQ1* by sampling firms across the period before, during and after the GFC. There is a general consensus that the peak of the GFC occurred between 2007 to 2008. Therefore, this period will be used to separate my sample between pre- and post-GFC sub-periods. Consequently, I use three period windows in my analyses.

Figure 2.1 provides an overview of my research design in relation to each research question. I will use the valuation model from Ohlson (1995; 1999) to test the value relevance of GAAP and non-GAAP earnings measures and address *RQ1*. This is my base model. Additionally, I will separately test the information content of these alternative earnings measures by regressing short-window cumulative abnormal returns (CAR) on their earnings surprise to address *RQ1a*. Finally, I will investigate separately the impact that information asymmetry *(RQ2)*, earnings quality *(RQ3)* and conservatism *(RQ4)* have on the value relevance of the alternative earnings measures across the three sub-periods of my study.

Figure 2.1: Overview of Research Design and Research Questions



2.3 EMPIRICAL MODELS

2.3.1 Value Relevance Model

2.3.1.1 Base Model

To measure value relevance, I adopt the Ohlson (1995; 1999) valuation model where firm value is a function of book value of equity and earnings as my base model. This model can also include factors that are considered "as 'background' information that influences value without violating the idea that accounting data provide kernel information" (Ohlson, 1999, p. 156). Consistent with Brown and Sivakumar (2003) and Albring *et al*. (2010), I adapt the model to include a non-GAAP and a GAAP measure of earnings to test the incremental value relevance of earnings.

I investigate four non-GAAP measures of earnings. First, I use the earnings reported by analysts in I/B/E/S. Thomson Reuters (2009, p. 35) states that I/B/E/S earnings per share is defined as "the EPS that the contributing analyst considers to be that with which to value a security. This figure may include or exclude certain items depending on the contributing analyst's specific model." While this definition is ambiguous, the measure has been used extensively in prior studies and is understood to include adjustments to reported profits for nonrecurring items. The computation of the measure, however, may not be consistent across firms. The second earnings measure I use is S&P's core earnings measure, which represents another alternative to GAAP earnings. Unlike I/B/E/S earnings, this measure is explicitly defined in Blitzer *et al*. (2002). The third non-GAAP measure of earnings is cash earnings, which is measured as net income before adjustments for depreciation and amortisation (i.e., long term accruals). This is a measure commonly used in the financial press. This measure, unlike cash flows from operations, does include the effects of certain accruals. Finally, I also examine cash flows from operations.

I also examine two different measures of GAAP earnings commonly used in prior studies - earnings from operations adjusted to exclude special items (GAAP1) and income before extraordinary items (GAAP2). Both earnings measures are argued to represent earnings from continuing operations. GAAP1 represents earnings adjusted to exclude the effects of special items and is a measure similar to I/B/E/S earnings and S&P core earnings.

In summary, the test variables for earnings (all measured on a per share basis) are listed below.[10] These variables include two differential variables to capture the incremental effects of GAAP earnings to non-GAAP earnings and represent the two GAAP earnings measures I use in my study. The tests variables are:

IBES:	Earnings reported by analysts in I/B/E/S.
CORE:	Core earnings reported by Standard & Poor's.
CE:	Cash earnings, i.e., net income before adjustments for depreciation and amortisation.
CF:	Cash flow from operations.
GAAP1:	GAAP earnings from operations adjusted to exclude special items.
GAAP2:	GAAP income before extraordinary items.
DIFF1:	GAAP1 minus the relevant non-GAAP earnings.
DIFF2:	GAAP2 minus the relevant non-GAAP earnings.
Price:	Closing share price at earnings announcement date.

[10] I use "I/B/E/S" when referring to the analysts tracking service/institution and "IBES" when referring to the earnings variable in my study.

As noted earlier in this chapter, prior studies consistently find that non-GAAP earnings are superior to GAAP earnings. Therefore, investors are unlikely to disregard the information in non-GAAP earnings in their valuation decision. Of interest, however, is whether investors seeking more credible and reliable information find GAAP earnings to be incrementally value relevant. Consequently, I adopt the book value of equity and earnings regression model that is consistent with Brown and Sivakumar (2003) and Albring *et al.* (2010), which decomposes the earnings component of the model and allows a direct comparison of the incremental value relevance of GAAP earnings.

Therefore, the general forms of the OLS regression models are:

$$P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it} \qquad 2.1$$

$$P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it} \qquad 2.2$$

where P_{it} is the closing share price for firm *i* at time *t*, BV_{it} is the book value of equity per share of firm *i* at time *t*, $NonGAAPE_{it}$ is the non-GAAP earnings measure of interest for firm *i* at time *t*, $DIFF1_{it}$ is GAAP1 minus the non-GAAP earnings measure of interest for firm *i* at time *t*, $DIFF2_{it}$ is GAAP2 minus non-GAAP earnings measure of interest for firm *i* at time *t*. All variables are measured on a per share basis. The model provides direct empirical evidence of whether GAAP earnings have significant incremental value relevance over non-GAAP earnings.

In each of these models, the coefficient β_2 allows for a test of the comparative value relevance of the non-GAAP earnings measure of interest, i.e., IBES, CORE, CE and CF. The coefficient β_3 tests the incremental value relevance of GAAP earnings relative to non-GAAP earnings, i.e., a statistically significant β_3 indicates that GAAP earnings have incremental value relevance. Furthermore, using non-GAAP earnings as the primary test variable in my models biases the results in favour of non-GAAP earnings and may bias against finding significance for GAAP earnings. Conversely, the strength of the evidence is greater if the results are significant for GAAP earnings.

2.3.1.2 Main Effects and Interaction Terms Model

I examine separately the impact of information asymmetry, earnings quality and conservatism to address *RQ2*, *RQ3* and *RQ4*, respectively. That is, I investigate whether there are systematic differences in my results due to these factors. The specific measures I use for each of these factors are discussed in detail below.

In my analyses, I sort my sample into quintiles using the respective measures for information asymmetry, earnings quality and conservatism. However, I focus only on the extreme quintiles, i.e., I test my models on observations in my samples that are either in quintile 1 (low) or quintile 5 (high). If there are systematic differences in my results due to information asymmetry, earnings quality or conservatism, they are more likely to be evident in firms with extreme levels of these factors.

In each separate analysis of information asymmetry, earnings quality and conservatism, I include additional control variables in my base model to investigate the impact of these factors. I include a dummy variable where 1 indicates firms in the high quintile and 0 indicates firms in the low quintile for each respective measure of information asymmetry, earnings quality and conservatism. Additionally, I include the interaction term between the dummy variable and my test variable for the book value of equity (BV), non-GAAP earnings (NonGAAPE) and the incremental effect of GAAP earnings to non-GAAP earnings (DIFF1 and DIFF2) in Equations 2.1 and 2.2. The general forms of the OLS regression models for information asymmetry, earnings quality and conservatism are:

Information Asymmetry

$$\begin{aligned} P_{it} = {} & \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 IA_{it} + \beta_5 IA * BV_{it} \\ & + \beta_6 IA * NonGAAPE_{it} + \beta_7 IA * DIFF1_{it} + \varepsilon_{it} \end{aligned} \tag{2.3}$$

$$\begin{aligned} P_{it} = {} & \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 IA_{it} + \beta_5 IA * BV_{it} \\ & + \beta_6 IA * NonGAAPE_{it} + \beta_7 IA * DIFF2_{it} + \varepsilon_{it} \end{aligned} \tag{2.4}$$

Earnings Quality

$$\begin{aligned} P_{it} = {} & \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 EL_{it} + \beta_5 EL * BV_{it} \\ & + \beta_6 EL * NonGAAPE_{it} + \beta_7 EL * DIFF1_{it} + \varepsilon_{it} \end{aligned} \tag{2.5}$$

$$\begin{aligned} P_{it} = {} & \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 EL_{it} + \beta_5 EL * BV_{it} \\ & + \beta_6 EL * NonGAAPE_{it} + \beta_7 EL * DIFF2_{it} + \varepsilon_{it} \end{aligned} \tag{2.6}$$

Conservatism

$$P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 CON_{it} + \beta_5 CON * BV_{it} + \beta_6 CON * NonGAAPE_{it} + \beta_7 CON * DIFF1_{it} + \varepsilon_{it} \quad 2.7$$

$$P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 CON_{it} + \beta_5 CON * BV_{it} + \beta_6 CON * NonGAAPE_{it} + \beta_7 CON * DIFF2_{it} + \varepsilon_{it} \quad 2.8$$

where P_{it} is the closing share price for firm i at time t, BV_{it} is the book value of equity per share of firm i at time t, $NonGAAPE_{it}$ is the non-GAAP earnings measure of interest for firm i at time t, $DIFF1_{it}$ is GAAP1 minus the non-GAAP earnings measure of interest for firm i at time t, $DIFF2_{it}$ is GAAP2 minus non-GAAP earnings measure of interest for firm i at time t, IA_{it} is the information asymmetry dummy variable measure of interest for firm i at time t, $IA*BV_{it}$ is the interaction term of the information asymmetry dummy variable with the book value of equity per share for firm i at time t. $IA*NonGAAPE_{it}$ is the interaction term of the information asymmetry dummy variable with the non-GAAP earnings measure of interest for firm i at time t, $IA*DIFF1_{it}$ is the interaction term of the information asymmetry dummy variable with DIFF1 for firm i at time t, $IA*DIFF2_{it}$ is the interaction term of the information asymmetry dummy variable with DIFF2 for firm i at time t, EL_{it} is the earnings quality dummy variable measure of interest for firm i at time t, $EL*BV_{it}$ is the interaction term of the earnings quality dummy variable with the book value of equity per share for firm i at time t. $EL*NonGAAPE_{it}$ is the interaction term of the earnings quality dummy variable with the non-GAAP earnings measure of interest for firm i at time t, $EL*DIFF1_{it}$ is the interaction term of the earnings quality dummy variable with DIFF1 for firm i at time t, $EL*DIFF2_{it}$ is the interaction term of the earnings quality dummy variable with DIFF2 for firm i at time t, CON_{it} is the conservatism dummy variable measure of interest for firm i at time t, $CON*BV_{it}$ is the interaction term of the conservatism dummy variable with the book value of equity per share for firm i at time t. $CON*NonGAAPE_{it}$ is the interaction term of the conservatism dummy variable with the non-GAAP earnings measure of interest for firm i at time t, $CON*DIFF1_{it}$ is the interaction term of the conservatism dummy variable with DIFF1 for firm i at time t, and $CON*DIFF2_{it}$ is the interaction term of the conservatism dummy variable with DIFF2 for firm i at time t.

As Equations 2.3 to 2.8 include interaction terms, the interpretation of the unique effects of the test variables is different to that of the base model in Equations 2.1 and 2.2. The coefficients of the main effects represent the base case, i.e., they measure the impact of the test variables when the dummy variable, i.e., IA, EL or CON, equals 0. The coefficients of the interaction terms measure the marginal impact of the main test variables when the dummy variable is 1. That is, the unique effect of BV, NonGAAPE and DIFF1 in Equation 2.3 is, $\beta_1 + \beta_5$, $\beta_2 + \beta_6$ and $\beta_3 + \beta_7$, respectively, when the dummy variable equals 1. Furthermore, if the coefficient of the interaction term, i.e., β_5, β_6 or β_7, is positive (negative), it is interpreted as having a more positive (more negative) effect on share price for firms where the dummy variable equals 1.

2.3.2 *Information Content Model*

I regress short-window cumulative abnormal returns (CAR) on earnings surprise measures based on each GAAP and non-GAAP earnings metrics to examine the information content of earnings. Each earnings surprise for each alternative earnings measure, is the difference between actual earnings and analysts' forecast earnings, which is consistent with prior studies' measures of earnings surprise (Bhattacharya *et al.*, 2003; Brown and Sivakumar, 2003; Doyle *et al.*, 2003; Marques, 2006). The general forms of the OLS regression models are:

$$CAR_i = \alpha_0 + \beta_1 ESNonGAAP_i + \beta_2 ESGAAP1_i + \varepsilon_i \qquad 2.9$$

$$CAR_i = \alpha_0 + \beta_1 ESNonGAAP_i + \beta_2 ESGAAP2_i + \varepsilon_i \qquad 2.10$$

where CAR_i is the cumulative market-adjusted abnormal returns for firm i over a three-day window ($t-1$ to $t+1$) centred around the earnings announcement date (t = 0), $ESNonGAAP_i$ is the non-GAAP earnings surprise for firm i, defined as the difference between the actual non-GAAP earnings measure of interest and the median consensus security analysts' forecast of earnings scaled by the closing share price at $t-7$, $ESGAAP1_i$ is the GAAP earnings surprise for firm i, defined as the difference between the actual GAAP1 earnings and the median consensus security analysts' forecast of earnings scaled by the closing share price at $t-7$ and $ESGAAP2_i$ is the GAAP earnings surprise for firm i, defined as the difference between the actual GAAP2 earnings and the median consensus security analysts' forecast of earnings scaled by the closing share price at $t-7$. All earnings are measured on a per share basis.

Ideally, earnings surprise should be measured as the difference between actual and expected earnings for a particular earnings metric. However, forecasts for earnings metrics other than analysts' earnings metric (e.g., I/B/E/S earnings) are generally not available. Using forecasts of I/B/E/S earnings to measure earnings surprise result with noisy measures and the classic errors in variables problems (Cohen *et al*., 2007). Nevertheless, I/B/E/S earnings forecast is a proxy of information available to the market and an indication of investors' earnings expectation. Prior studies are also subject to this limitation, which biases the results in favour of finding significance in I/B/E/S earnings relative to other earnings metrics (Bradshaw, 2011).

2.3.3 Information Asymmetry

I adopt the approach of Maskara and Mullineaux (2011) and construct a composite index based on six commonly used measures of information asymmetry. The six measures used to construct an Information Asymmetry Index (herein, IA Index) are: normalised analysts' forecast errors, dispersion of analysts forecast, volatility of residual returns, volatility of abnormal returns around earnings announcements, firm age and bid-ask spreads.

Noting the concerns identified in Krishnaswami and Subramaniam (1999) regarding forecast errors and earnings volatility, I compute normalised forecast errors, which is defined as the ratio of analysts' forecast error to the earnings volatility of the firm, to include in the IA Index. Analysts forecast errors is measured as the absolute difference between analysts' forecast earnings and actual earnings, where forecast earnings are the median security analysts' forecast in the month prior to the quarterly earnings announcement date. Earnings volatility is the standard deviation of the detrended quarterly earnings in the 12 quarters preceding the current fiscal quarter.[11]

Consistent with my Ohlson models in Equations 2.1 and 2.2, I compute separate forecast errors for each non-GAAP earnings measure (i.e., IBES, CORE, CE and CF). Each of these forecast error measure is then normalised as described above. Therefore, in constructing my IA Index, I use earnings-specific measures relevant to the non-GAAP earnings of interest. For example, in examining I/B/E/S earnings, the normalised

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[11] Detrended earnings are the residual obtained from regressing earnings on time. This regression is repeated for each alternative earnings measure.

forecast error is based on the difference between median analysts' forecast and actual I/B/E/S earnings.

Dispersion of analysts' forecasts indicates a level of disagreement among analysts and a lack of available information about a firm. Therefore, it is an indicator of information asymmetry. Dispersion of analysts' forecasts is defined as the standard deviation of the all earnings forecasts made in the month prior to quarterly earnings announcement and deflated by share price.

A reaction to earnings announcements by the market indicates that the market is surprised by the firm's announcement. Therefore, a strong reaction suggests high information asymmetry for these firms because management has private information to release. Consistent with Dierkens (1991), I measure volatility of residual returns as the standard deviation of market-adjusted daily stock returns in the quarter preceding the earnings announcement. Volatility of abnormal returns around earnings announcements is defined as the standard deviation of three-day cumulative abnormal returns around quarterly earnings reports, and computed over all available quarterly earnings announcements in the 12 quarters preceding the current fiscal quarter.

Firm age is measured as the number of months since share price data is first available on CRSP. Finally, I measure bid-ask spread as the average ratio of the difference between the daily bid and ask closing prices to the midpoint of the bid and ask closing prices.

To construct the IA Index, first, I partition the sample into the three time periods of the study. For each sub-period (i.e., pre-GFC, GFC and post-GFC), I group firms into the quintile ranking for each of the six information asymmetry measures. Then, I calculate the mean quintile ranking of a firm across all six information asymmetry measures. Finally, this mean ranking is used to regroup firms into discrete quintiles, which is the IA Index. Firms in the higher (lower) quintiles indicate firms with higher (lower) information asymmetry.

I examine the value relevance of the alternative earnings measures using my Ohlson model for firms in either the high or the low quintile of the information asymmetry index for each period window. Note that prior studies generally find non-GAAP earnings measures to be more value-relevant and informative relative to GAAP earnings measures, i.e., the market finds that non-GAAP earnings measures reduce information asymmetry. These studies, however, generally use data prior to the GFC or do not account for the impact of the GFC. Therefore, for the pre-GFC period, I expect to find firms with higher information asymmetry to be more strongly associated with non-GAAP earnings. However, in the GFC and post-GFC periods, there is greater uncertainty and volatility relative to the pre-GFC period. This suggests greater information asymmetry and a stronger association of the value relevance of non-GAAP earnings and firms with higher information asymmetry. On the other hand, if firms are seeking more credible and reliable information in a period of crisis, I expect to find firms with higher information asymmetry to be more strongly associated with GAAP earnings.

2.3.4 Earnings Quality

I calculate e-loading using the approach described in Ecker *et al*. (2006). The notable difference in my study is I calculate e-loading on a quarterly basis consistent with my sample.

First, I map current accruals to last quarter, current and next quarter cash flows, following the Dechow and Dichev (2002) model as modified by McNichols (2002):

$$TCA_{j,t} = \phi_{0,j} + \phi_{1,j}CFO_{j,t-1} + \phi_{2,j}CFO_{j,t} + \phi_{3,j}CFO_{j,t+1} + \phi_{4,j}\Delta REV_{j,t} + \phi_{5,j}PPE_{j,t} + \upsilon_{j,t} \qquad 2.11$$

where:

$TCA_{j,t}$ $= \Delta CA_{j,t} - \Delta CL_{j,t} - \Delta CASH_{j,t} + \Delta STDEBT_{j,t}$
= total current accruals in quarter t;

$CFO_{j,t}$ $= NIBE_{j,t} - TA_{j,t}$
= firm j's cash flow from operations in quarter t;

$NIBE_{j,t}$ = firm j's net income before extraordinary items in quarter t;

$TA_{j,t}$ $= \Delta CA_{j,t} - \Delta CL_{j,t} - \Delta CASH_{j,t} + \Delta STDEBT_{j,t} - DEPN_{j,t}$
= firm j's total accruals in quarter t;

$\Delta CA_{j,t}$ = firm j's change in current assets between quarter t-1 and quarter t;

$\Delta CL_{j,t}$ = firm j's change in current liabilities between quarter t-1 and quarter t;

$\Delta CASH_{j,t}$ = firm j's change in cash between quarter t-1 and quarter t;

$\Delta STDEBT_{j,t}$ = firm j's change in debt in current liabilities between quarter t-1 and quarter t;

$DEPN_{j,t}$ = firm j's depreciation and amortisation expense in quarter t;

$\Delta REV_{j,T}$ = firm j's change in revenues between quarter t-1 and quarter t;

$PPE_{j,T}$ = firm j's gross value of property, plant and equipment in quarter t.

All variables are scaled by average assets.

The procedure for calculating e-loading is described in detail in Ecker *et al*. (2006). To summarise, they estimate Equation 2.11 annually and in industry cross sections using the 48 industry classifications in Fama and French (1997). A firm's accruals quality (AQ) is measured as the firm's standard deviation of its residuals, from the above estimation, over the past five years. Using a dynamic portfolio technique that allows for differences in fiscal period end dates, they form and assign firms to AQ deciles on the first day of each month, m, based on the firm's most recent value of AQ known prior to m; firms with the smallest (largest) AQ values are placed in the first (tenth) decile. Furthermore, they lag the AQ measure by three months. Then, they calculate the average daily return for each decile. The AQ factor-mimicking portfolio, AQfactor, equals the difference between the daily returns of the poorest AQ deciles (deciles 7–10) and the best AQ deciles (deciles 1–4). Therefore, as AQfactor is time-specific and not firm-specific, Ecker *et al*. (2006) argue that it can be correlated with the returns of any firm to determine a firm's exposure to poor quality earnings. They add AQfactor as an independent variable and estimate its coefficient, the e-loading, using one-factor (superscript 1f) and three-factor (superscript 3f) asset pricing regressions:

$$R_{j,t} - R_{F,t} = \alpha_{j,T}^{1f} + \beta_{j,T}^{1f}\left(R_{M,t} - R_{F,t}\right) + e_{j,T}^{1f} AQFactor_t + \varepsilon_{j,T}^{1f} \qquad 2.12$$

$$R_{j,t} - R_{F,t} = \alpha_{j,T}^{3f} + \beta_{j,T}^{3f}\left(R_{M,t} - R_{F,t}\right) + s_{j,T}^{3f} SMB_t + h_{j,T}^{3f} HML_t + e_{j,T}^{3f} AQFactor_t + \varepsilon_{j,T}^{3f} \qquad 2.13$$

where:

t = index for the number of trading days in period t;

$R_{j,t}$ = firm j's return on day t;

$R_{F,t}$ = the risk-free rate on day t;

$R_{M,t}$ = the market return on day t;

SMB_t = small-minus-big factor on day t;

HML_t = high-minus-low book-to-market factor on day t.

Equation 2.12 is based on the CAPM and Equation 2.13 controls for other factors known to affect returns, which are market risk premium, size and book-to-market ratio.

In this study, I impose data requirements of at least 20 firms in the industry-year to estimate Equation 2.11 for each of the 48 Fama and French (1997) industries and at least 45 daily returns to estimate Equations 2.12 and 2.13. These requirements are consistent with Ecker *et al*. (2006). Additionally, I define the quarterly interval to calculate Equations 2.12 and 2.13 as the period between the previous quarterly earnings announcement date and the current quarterly earnings announcement date. This interval measures investors' contemporary perception of earnings quality exposure.

As with information asymmetry, I examine the impact of earnings quality on the value relevance of GAAP and non-GAAP earnings by quintiles of e-loading and by my sample period windows. Specifically, I assign firms into quintiles based on the firms' e-loading for each period window of my study.

A high (low) e-loading indicates strong (weak) sensitivity to poor quality earnings. Note that AQfactor is derived from earnings measured under GAAP. Therefore, investors' exposure to earnings quality is in relation to GAAP earnings. If investors perceive their exposure to poor quality earnings is high, they may be more likely to seek information from alternative sources. Additionally, it is also likely that GAAP earnings will be comparatively less value relevant than non-GAAP earnings. Therefore, I expect to find non-GAAP earnings to be less value relevant when e-loading is low (i.e., low exposure to poor earnings quality) in comparison to when e-loading is high.

2.3.5 Conservatism

I use two measures of conservatism commonly found in the literature to examine the impact conservatism on the value relevance of GAAP and non-GAAP earnings. These two measures represent each of the two types of conservatism – unconditional and conditional. I use market-to-book ratio to measure conditional conservatism and the asymmetric timeliness measure of Basu (1997) to measure conditional conservatism.

The market-to-book ratio is generally defined as the market value of net assets to book value of net assets. Prior studies, however, have computed this ratio differently. For example, Givoly and Hayn (2000) use the market value of net assets to the book value of net assets to compute this ratio. On the other hand, Beatty *et al*. (2008) use the market value of total assets to the book value of total assets to compute this ratio. It is generally assumed and accepted that the book value of debt is equal to its fair value. Including or excluding debt, however, will impact on the ratio as the value of debt does not affect the numerator and the denominator equally. In the case of Beatty *et al*. (2008), it is appropriate to remove the effect of debt from the ratio as they investigate the association between conservatism and debt. Therefore, consistent with general convention and prior studies (Balachandran and Mohanram, 2011; Roychowdhury and Watts, 2007; Watts and Zuo, 2012), I measure the market-to-book ratio of a firm as its market value of equity at the end of the fiscal quarter divided by the book value of equity at the end of the fiscal quarter.

The Basu (1997) asymmetric timeliness measure is the coefficient β_3 estimated from the following model:

$$X_{it} / P_{it-1} = \alpha_0 + \beta_1 DR_{it} + \beta_2 R_{it} + \beta_3 DR_{it} * R_{it} + \varepsilon_{it} \qquad 2.14$$

where X_{it} is GAAP earnings per share before extraordinary items of firm i in period t, P_{it-1} is beginning of period share price of firm i, DR_{it} is a dummy variable that has a value of 1 if $R_{it} < 0$ and 0 otherwise, and R_{it} is stock returns.

Basu (1997) estimates his model using annual data where returns are computed from nine months before the current fiscal year end to three months after the fiscal year end. (Dietrich *et al*., 2007) argue that the model estimates are biased because returns are affected by earnings information around the earnings announcement date. Ryan (2006) suggests filtering returns to mitigate this bias, and compute returns over the fiscal year[12]. Therefore, I compute cumulated daily returns in Equation 2.14 from the beginning of the fiscal quarter to the end of the fiscal quarter, consistent with Givoly *et al*. (2007) and Basu *et al*. (2001). I estimate the quarterly time-series regression model for each firm-

[12] Basu (1997) also computed returns over the fiscal year to exclude the effects of earnings announcement reaction in his specification test. The results for this test are similar to the main results. Givoly *et al*. (2007) and Basu *et al*. (2001) also tested their models using returns computed over the fiscal period. This does not affect their main findings.

quarter in my sample over all quarterly observations for that firm in the previous 20 quarters. This yields an estimated β_3 for each firm and fiscal quarter.

2.4 PERIOD WINDOWS

To examine the impact of the GFC, I partition my sample into three sub-periods: pre-GFC, GFC and post-GFC. The general consensus is that the GFC occurred during the period from 2007 to 2008, however, prior studies have defined the specific period differently. Erkens *et al*. (2012) define the GFC as the period between January 2007 to September 2008 in their investigation of the impact of corporate governance on the performance of financial firms. Watts and Zuo (2012) examine the effects of accounting conservatism on firm value during the GFC and define this period from August 2007 to August 2009. Francis *et al*. (2013) define the GFC as the period between October 2007 and March 2009 in examining the association between conservatism and firm value during the crisis. In my study, I consider the GFC period to begin from July 2007 and to end in December 2008. This covers the period generally accepted as the peak of the GFC. For each period, I test my models on samples that consist of firms included in the S&P 500 versus firms that are not included in order to investigate the relative impact on large and small firms. Also, because a key trigger of the GFC stems from the financial sector, I test my models on firms that are classified under this sector using GICS (code 40).

2.5 PANEL DATA CONSIDERATIONS

The sample is in the form of panel data and the assumptions of OLS regression may not hold. Furthermore, there is evidence that a pooled OLS approach can lead to biased standard errors when the sample is a panel data set (Petersen, 2009; Gow *et al*., 2010). Therefore, I adopt the approach in Petersen (2009) and cluster the standard errors on two dimensions – firm and time. Petersen (2009), however, argues that too few clusters on a dimension will produce biased results, even when the standard errors are clustered on the correct dimension. Gow *et al*. (2010) and Thompson (2010) warn that when the number of clusters is small, clustering on two dimensions will over-reject the null. Nevertheless, they demonstrate that their results are robust to cluster size as small as ten. An alternative approach in such instances is to cluster on one dimension. However, there are contrasting arguments on selecting the dimension to cluster. While it is common, when clustering on a single dimension, to cluster by firms and control for firm effects, Thompson (2010) suggests clustering on the dimension with fewer clusters.

In my sample for the GFC period, the number of time clusters (fiscal quarters) is fewer than ten. When controlling for dependence on one dimension (either firm or time), it assumes independence on the other dimension. In my study, it is highly likely that there are firm and time effects, given the nature of the GFC and its impact across the economy at a given point in time. Thompson (2010) demonstrates that clustering on the dimension with fewer clusters results in a greater bias reduction. Additionally, the nature of the GFC suggests that, of the two dimensions, the time effect is likely to be more significant than the firm effect. Therefore, I re-estimate the models and cluster on a single dimension, time, consistent with Thompson (2010), and also by firm as a robustness test.

2.6 EVALUATING THE MODELS

In evaluating the models, the value of the earnings coefficients and their significance provide direct evidence of their value relevance. Prior studies, which often evaluate two models (GAAP vs. I/B/E/S earnings, or I/B/E/S earnings vs. Proforma earnings), generally rely on the approach in Vuong (1989) for model selection and test of statistical significance between competing models. However, this test is not appropriate in my study where the sample is a panel data set and standard errors are clustered, in which observations are correlated and violate the independent and identically distributed (i.i.d) assumption. In addition, I investigate 4 different primary measures of earnings and, within each primary earnings measure I test two different measures of GAAP earnings. Essentially, I test eight different models. Accordingly, I use the Bayesian Information Criterion (BIC) for model selection and to evaluate the relative performance of these models.[13] A lower value of BIC is preferable and the model with the lowest value of BIC is the best fitting model. BIC, however, does not indicate if the models are significantly different from each other. Raftery (1995) argues, however, that is possible, using the difference in BIC values between models, to derive an approximation that corresponds to conventional *t* values. He proposes the following

[13] The Bayesian Information Criterion (BIC) is a method for assessing model fit that accounts for the number of parameters and number of observations in the model. BIC is defined as $BIC = 2*ln(likelihood) + ln(N)*P$, where N is the number of observations and P is the number of parameters in the model. As I cluster my model on two dimensions, firm and time, there are alternative measures of N that may be used in computing BIC. The value of BIC in my reported results is calculated using the total number of observations in the model. I also recalculate BIC using the number of firm cluster as N with similar results.

cutoffs of minimum BIC difference to indicate the strength of the evidence, where 0 is "weak", 2 is "positive", 6 is "strong" and 10 is "very strong". I use this approach to evaluate the strength of my evidence.

2.7 SAMPLE SELECTION

My sample consists of all US publicly traded firms from Compustat and I/B/E/S for which the required data items are available over the period 2002 to 2012. I start my sample from 2002 because this is the first year that the S&P core earnings are available. I collect quarterly data for GAAP earnings, cash earnings and cash flows for firms with fiscal years ending in 2002 to 2012 from Compustat Unrestated Quarterly file.[14] This data file, however, does not include unrestated S&P Core earnings data. Therefore, the S&P core earnings data are collected from Compustat's Fundamentals Quarterly file, which includes adjustments for subsequent restatements by firms after the earnings announcement date. The data will bias the results against finding significance in S&P Core earnings relative to other earnings metrics. I also collect the earnings announcement date from Compustat. I collect data for analysts' forecasts and I/B/E/S earnings from I/B/E/S Detail History with Actuals file. Share price and returns data are collected from CRSP Daily Stock file. I also collect the daily risk-free rate, market returns, SMB and HML data from CRSP. Finally, firm age is collected from CRSP and is measured from the beginning of when stock data is first available on CRPS

The initial sample consists of 245,100 firm-quarter observations (7,235 firms) after matching data from I/B/E/S, Compustat and CRSP data files for which the earnings announcement date is not missing. I impose data requirements that firms not have missing values for variables in the value relevance base models (Equations 2.1 and 2.2) and information content models (Equations 2.9 and 2.10), not have a change of fiscal year end and have a minimum number of non-missing observations of 20 firm-quarters over the sample period. Additionally, to ensure that my results are not driven by extreme values, I restrict my sample to observations that are within two standard deviations from the mean of my variables of interest.[15] My final sample consists of 73,179 firm-quarter observations (2,092 firms). There are 39,469 firm-quarter

[14] The Compustat Unrestated Quarterly file contains as first reported financial data, i.e., before subsequent restatements by firms. Therefore, the financial data in this file represent the figures disclosed to investors on the earnings announcement date.

[15] I also relaxed this constraint to include observations that are within two and a half standard deviations from the mean of my variables of interest. The results using this sample are substantially similar to those reported in the main text.

observations (2,092 firms) in the pre-GFC (2002-2007) period, 10,340 firm-quarter observations (2,043 firms) in the GFC (2007-2008) period and 23,370 firm-quarter observations (1,900 firms) in the post-GFC (2009-2012) period.

Table 2.1 presents the distribution of my sample for the period 2002 to 2012.

Table 2.1: Distribution of Main Sample for the Period 2002 to 2012

		Firm Type			
		Financial	**Non-Financial**	**S&P 500**	**Non-S&P 500**
Pre-GFC	Firm quarters	4,253	35,216	7,908	31,561
January 2002 to	No. of firms	242	1,850	416	1,771
June 2007	No. of quarters	25	25	25	25
GFC	Firm quarters	1,234	9,106	2,193	8,147
July 2007 to	No. of firms	239	1,804	419	1,665
December 2008	No. of quarters	9	9	9	9
Post-GFC	Firm quarters	2,893	20,477	5,532	17,838
January 2009 to	No. of firms	222	1,678	424	1,530
December 2012	No. of quarters	16	16	16	16
	Firm quarters	8,380	64,799	15,633	57,546
Total	No. of firms	242	1,850	490	1,808
	No. of quarters	50	50	50	50

2.8 SUMMARY

In this chapter, I present background and literature review for my study. I establish the context of my study and discuss it in relation to prior research. Specifically, I identify how my study fills the gap in the literature in respect to examining the impact of the GFC on the value relevance of GAAP and non-GAAP earnings. I also identify factors that may impact on value relevance that have not been examined previously in the context of the comparative value relevance of GAAP and non-GAAP earnings. These factors include information asymmetry, earnings quality and conservatism. I identify the research questions I address in my study. Finally, I describe and discuss my research design, including the empirical models I use, the partition of my sample into three sample periods to examine the impact of the GFC, data collection and panel data considerations, and how I evaluate my empirical models.

CHAPTER 3

OHLSON MODEL RESULTS

3.1 INTRODUCTION

I examine the impact of the GFC on the value relevance of GAAP and non-GAAP earnings to address *RQ1*. I partition my sample into three periods to test if there are systematic differences in the value relevance of GAAP and non-GAAP earnings before, during and after the peak of the GFC. My base model is the Ohlson (1995; 1999) valuation model, which regresses price on book value of equity and earnings.

In this chapter, I present the analyses and results of these tests. My main results of the Ohlson model show that non-GAAP earnings are significant and value relevant, however, this is not consistent across all models and samples. In contrast, prior studies find that I/B/E/S earnings consistently outperform, and are more value relevant than, GAAP earnings (Albring *et al.*, 2010; Bhattacharya *et al.*, 2003; Brown and Sivakumar, 2003). While GAAP earnings have incremental value relevance, I also find that this varies with the sample and test period. I expect investors to shift their emphasis to GAAP earnings during and after the GFC, however, this is only partly supported. There is evidence of a shift in the emphasis investors place on GAAP relative to non-GAAP earnings across the three periods of my study and that the GFC has an impact on the value relevance of these earnings measures. However, the shift in investors' emphasis is not consistent across all samples. The results also indicate that investors place greater emphasis on I/B/E/S earnings after the GFC in comparison to before the GFC. This suggests that the emphasis investors place on the alternative earnings measures are fluid; the evidence indicate that non-GAAP earnings are more significant in the post-GFC period in comparison to the pre-GFC period. Furthermore, my results show that GAAP earnings are incrementally value relevant in relation to non-GAAP earnings. Specifically, I find evidence that GAAP earnings are incrementally value relevant in relation to I/B/E/S earnings in the pre-GFC period in the financial sector sample and in both the pre-GFC and GFC periods in the non-financial sector sample. Therefore, my results only provide moderate support of prior studies, which show I/B/E/S earnings to be superior and consistently more value relevant than GAAP earnings.

3.2 UNIVARIATE RESULTS

To reiterate, the main test variables of the valuation model in my study are:

BV:	Book value of common equity
IBES:	Earnings reported by analysts in I/B/E/S.
CORE:	Core earnings reported by Standard & Poor's.
CE:	Cash earnings, i.e., net income before adjustments for depreciation and amortisation.
CF:	Cash flow from operations.
GAAP1:	GAAP earnings from operations adjusted to exclude special items.
GAAP2:	GAAP income before extraordinary items.
DIFF1:	GAAP1 minus the relevant non-GAAP earnings.
DIFF2:	GAAP2 minus the relevant non-GAAP earnings.
Price:	Closing share price at earnings announcement date.

The coefficient of IBES, CORE, CE and CF allows for a test of the comparative value relevance between each of these non-GAAP earnings. The last two variables, DIFF1 and DIFF2 capture the incremental effect of the two measures of GAAP earnings (GAAP1 and GAAP2) in the model. Therefore, DIFF1 and DIFF2 test the incremental value relevance of GAAP earnings relative to the non-GAAP earnings measure tested in the model. In this chapter, references to the value relevance of non-GAAP earnings denote comparative value relevance between these earnings, i.e., IBES, CORE, CE and CF, and references to DIFF1, DIFF2 and GAAP earnings denote incremental value relevance between GAAP and non-GAAP earnings.

Table 3.1 provides descriptive statistics of the variables for all firms in the sample. In Panel A, across all non-GAAP measures for the financial sector sample, mean dollar earnings per share range from -0.116 (CF) to 0.987 (CE) in the pre-GFC period. On average, IBES is higher than CORE in each of the three periods. During the GFC, mean IBES, CORE and CE are relatively lower than their pre-GFC values. It appears that CORE is a relatively more conservative measure of earnings than IBES. In both the pre- and post-GFC periods, CF has the lowest mean earnings, which is consistent with cash flows as the most conservative earnings measure. During the GFC, however, CF has the highest mean earnings. This may be due to significant writedowns of book values by firms as a result of the GFC, which has a relatively greater impact on accrual accounting earnings than cash flows.

Table 3.1: Descriptive Statistics of Variables

Panel A: Financial Sector Sample (Pre-GFC: N = 4,253; Firms = 242 | GFC: N = 1,234; Firms = 239 | Post-GFC: N = 2,893; Firms = 222)

	BV			IBES			CORE			CE			CF		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	28.940	28.637	28.010	0.829	0.338	0.457	0.755	0.120	0.417	0.987	0.085	0.604	-0.116	0.631	0.006
sd	60.540	56.585	43.205	3.058	3.278	1.260	2.237	3.862	1.318	2.664	4.366	2.481	14.585	11.287	4.802
Minimum	-1.059	-24.323	-33.894	-94.600	-88.300	-20.400	-32.066	-89.412	-22.582	-31.441	-88.586	-27.527	-401.508	-212.642	-95.558
25 pct	9.720	10.744	10.424	0.248	0.160	0.100	0.192	0.078	0.050	0.289	0.133	0.136	-1.007	0.054	-0.713
Median	16.927	18.223	18.470	0.470	0.400	0.330	0.425	0.316	0.290	0.560	0.421	0.412	0.561	0.703	0.476
75 pct	26.844	30.182	32.057	0.870	0.826	0.730	0.806	0.721	0.703	1.005	0.862	0.853	1.375	1.397	1.070
Maximum	798.546	803.917	586.588	35.400	27.000	12.910	34.810	28.465	17.545	38.025	29.509	105.041	394.398	143.574	83.842

	GAAP1-IBES			GAAP2-IBES			GAAP1-CORE			GAAP2-CORE			GAAP1-CE		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	0.015	-0.392	0.008	0.020	-0.413	0.029	0.090	-0.173	0.048	0.095	-0.195	0.069	-0.143	-0.138	-0.139
sd	2.217	2.859	0.987	2.243	2.846	0.975	0.648	2.024	0.855	0.751	2.018	0.840	0.854	0.815	1.895
Minimum	-32.600	-50.700	-19.800	-32.569	-49.220	-12.785	-4.348	-37.050	-16.618	-12.879	-37.049	-9.603	-20.265	-8.538	-89.111
25 pct	-0.010	-0.150	-0.040	-0.015	-0.140	-0.024	0.001	-0.024	-0.004	0.001	-0.013	0.000	-0.144	-0.162	-0.171
Median	0.000	0.000	0.000	0.002	-0.002	0.003	0.021	0.003	0.006	0.031	0.011	0.016	-0.049	-0.061	-0.060
75 pct	0.020	0.000	0.020	0.048	0.021	0.061	0.067	0.047	0.055	0.094	0.081	0.079	-0.003	-0.003	-0.005
Maximum	94.878	9.680	28.400	94.865	6.180	29.563	17.365	11.009	22.611	18.866	4.685	17.921	25.840	10.860	20.939

	GAAP2-CE			GAAP1-CF			GAAP2-CF			Price		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	-0.138	-0.160	-0.117	0.961	-0.684	0.458	0.966	-0.706	0.480	51.705	40.970	36.772
sd	0.675	0.581	1.712	14.863	11.756	4.979	14.899	11.789	4.943	99.691	64.625	43.971
Minimum	-10.888	-8.535	-88.501	-383.798	-154.674	-81.442	-383.747	-153.624	-81.441	1.300	0.281	1.230
25 pct	-0.117	-0.125	-0.130	-0.798	-1.124	-0.734	-0.781	-1.113	-0.722	20.450	17.620	16.430
Median	-0.031	-0.035	-0.033	-0.173	-0.441	-0.241	-0.167	-0.407	-0.220	32.510	28.675	27.230
75 pct	0.000	0.000	0.000	1.417	0.358	1.118	1.468	0.329	1.142	47.160	43.020	42.610
Maximum	25.751	2.996	16.215	412.308	150.842	101.148	411.833	150.894	101.415	1244.351	969.038	530.720

Panel B: Non-Financial Sector Sample (Pre-GFC: N = 35,216; Firms = 1,850 | GFC: N = 9,106; Firms = 1,804 | Post-GFC: N = 20,477; Firms = 1,678)

	BV			IBES			CORE			CE			CF		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	9.770	11.919	12.717	0.235	0.315	0.400	0.128	0.197	0.324	0.401	0.450	0.630	0.001	0.168	0.011
sd	16.184	15.835	16.045	0.931	0.947	0.736	1.392	1.497	0.970	1.547	1.804	1.239	2.625	2.888	2.645
Minimum	-333.780	-81.807	-91.419	-33.300	-26.400	-24.000	-59.194	-59.847	-41.691	-53.677	-59.363	-41.549	-93.262	-82.561	-79.364
25 pct	3.781	4.707	4.947	0.050	0.060	0.070	-0.009	0.003	0.022	0.105	0.106	0.155	-0.326	-0.163	-0.290
Median	7.171	9.123	9.782	0.200	0.280	0.300	0.153	0.225	0.255	0.328	0.431	0.490	0.192	0.332	0.313
75 pct	12.004	15.552	16.939	0.410	0.590	0.630	0.368	0.515	0.578	0.650	0.862	0.951	0.655	0.943	0.955
Maximum	647.408	363.873	358.296	30.290	15.260	13.870	28.758	15.264	18.221	35.156	15.979	22.078	114.769	101.652	82.212

	GAAP1-IBES			GAAP2-IBES			GAAP1-CORE			GAAP2-CORE			GAAP1-CE		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	-0.026	-0.050	-0.038	-0.074	-0.163	-0.091	0.081	0.068	0.037	0.033	-0.045	-0.016	-0.192	-0.185	-0.269
sd	0.809	1.128	0.541	1.011	1.389	0.793	0.455	0.355	0.388	0.513	0.713	0.422	0.879	0.947	0.744
Minimum	-52.795	-54.995	-37.397	-52.664	-54.847	-38.291	-9.305	-8.655	-18.191	-43.286	-16.802	-16.836	-54.454	-17.994	-19.293
25 pct	0.000	-0.020	-0.020	-0.020	-0.053	-0.067	0.003	-0.001	-0.003	0.000	0.000	-0.004	-0.254	-0.327	-0.353
Median	0.000	0.000	0.000	-0.002	-0.003	-0.003	0.023	0.006	0.004	0.016	0.000	0.000	-0.113	-0.140	-0.168
75 pct	0.000	0.000	0.000	0.002	0.002	0.002	0.069	0.056	0.038	0.048	0.026	0.006	-0.038	-0.045	-0.062
Maximum	14.550	13.780	23.720	20.470	11.839	23.614	47.627	7.294	29.171	15.275	11.998	13.728	45.241	19.430	28.344

	GAAP2-CE			GAAP1-CF			GAAP2-CF			Price		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	-0.240	-0.298	-0.322	0.208	0.097	0.350	0.160	-0.016	0.297	25.643	26.493	29.744
sd	0.662	0.561	0.505	2.762	3.052	2.716	2.851	3.226	2.805	45.338	32.972	37.953
Minimum	-57.036	-17.988	-15.982	-143.567	-147.248	-120.609	-142.415	-148.203	-123.281	0.241	0.120	0.320
25 pct	-0.269	-0.350	-0.378	-0.379	-0.538	-0.531	-0.411	-0.598	-0.587	11.003	9.540	10.570
Median	-0.129	-0.166	-0.194	-0.071	-0.133	-0.118	-0.080	-0.149	-0.130	19.290	19.605	21.800
75 pct	-0.051	-0.069	-0.086	0.372	0.245	0.450	0.364	0.240	0.444	31.220	34.590	38.230
Maximum	12.922	2.916	4.302	106.222	89.981	81.234	106.222	89.980	81.287	2411.807	817.990	906.930

Panel C: S&P 500 Sample (Pre-GFC: N = 7,908; Firms = 416 | GFC: N = 2,193; Firms = 419 | Post-GFC: N = 5,532; Firms = 424)

	BV			IBES			CORE			CE			CF		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	15.403	19.076	19.024	0.602	0.633	0.771	0.486	0.456	0.682	0.821	0.779	1.085	-0.039	0.412	0.070
sd	34.959	37.001	21.385	1.387	1.537	0.923	1.563	1.774	1.000	1.895	2.521	1.386	8.854	8.541	3.981
Minimum	-9.745	-15.856	-40.459	-8.010	-28.200	-19.400	-49.327	-30.340	-22.582	-46.941	-54.747	-27.527	-401.508	-212.642	-95.558
25 pct	5.973	7.626	8.366	0.230	0.340	0.354	0.151	0.254	0.276	0.338	0.438	0.492	-0.764	0.003	-0.653
Median	10.193	13.231	13.753	0.420	0.600	0.620	0.362	0.490	0.544	0.617	0.778	0.846	0.466	0.753	0.708
75 pct	16.733	21.800	24.400	0.710	0.960	1.030	0.653	0.838	0.963	1.022	1.315	1.418	1.083	1.487	1.463
Maximum	798.546	803.917	358.296	35.400	27.000	13.870	34.810	28.465	13.875	38.025	29.509	22.078	394.398	143.574	43.704

	GAAP1-IBES			GAAP2-IBES			GAAP1-CORE			GAAP2-CORE			GAAP1-CE		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	-0.013	-0.106	-0.047	-0.082	-0.263	-0.100	0.102	0.071	0.043	0.033	-0.086	-0.010	-0.232	-0.252	-0.360
sd	0.467	1.311	0.499	0.995	1.627	0.729	0.694	1.100	0.412	0.562	1.292	0.499	0.986	1.171	0.851
Minimum	-17.360	-33.600	-19.800	-46.160	-33.548	-12.785	-9.305	-31.460	-16.618	-26.545	-31.408	-9.603	-21.110	-17.994	-21.628
25 pct	-0.005	-0.050	-0.030	-0.039	-0.105	-0.103	0.005	0.001	-0.004	0.000	0.000	-0.011	-0.336	-0.425	-0.456
Median	0.000	0.000	0.000	-0.002	-0.004	-0.004	0.033	0.028	0.009	0.023	0.011	0.000	-0.168	-0.202	-0.231
75 pct	0.000	0.000	0.000	0.002	0.002	0.003	0.097	0.107	0.063	0.067	0.061	0.020	-0.056	-0.069	-0.095
Maximum	14.550	9.680	10.880	20.470	6.180	29.563	47.627	9.683	10.267	11.165	2.335	17.921	45.241	19.430	11.528

	GAAP2-CE			GAAP1-CF			GAAP2-CF			Price		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	-0.301	-0.409	-0.413	0.627	0.116	0.655	0.558	-0.041	0.602	39.903	43.930	48.257
sd	0.577	0.821	0.667	9.008	8.520	3.992	9.059	8.623	4.037	62.398	49.799	48.839
Minimum	-16.021	-17.988	-15.982	-383.798	-154.674	-63.178	-383.747	-153.624	-56.163	2.020	1.757	2.410
25 pct	-0.358	-0.461	-0.493	-0.522	-0.779	-0.685	-0.575	-0.853	-0.755	21.468	22.220	24.115
Median	-0.186	-0.239	-0.259	-0.124	-0.242	-0.218	-0.138	-0.268	-0.238	32.195	35.810	37.955
75 pct	-0.077	-0.113	-0.125	1.056	0.514	1.127	1.039	0.440	1.113	46.517	53.940	57.965
Maximum	5.477	2.298	5.085	412.308	150.842	101.148	411.833	150.894	101.415	1244.351	969.038	718.950

Panel D: Non-S&P 500 Sample (Pre-GFC: N = 31,561; Firms = 1,771 | GFC: N = 8,147; Firms = 1,665 | Post-GFC: N = 17,838; Firms = 1,530)

	BV			IBES			CORE			CE			CF		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	10.942	12.525	13.241	0.224	0.233	0.294	0.123	0.116	0.228	0.375	0.306	0.485	-0.005	0.173	-0.008
sd	22.804	20.608	21.948	1.326	1.399	0.749	1.498	1.972	1.002	1.651	2.187	1.442	4.087	2.999	2.618
Minimum	-333.780	-81.807	-91.419	-94.600	-88.300	-24.000	-59.194	-89.412	-41.691	-53.677	-88.586	-41.549	-169.713	-82.561	-77.397
25 pct	3.671	4.573	4.633	0.035	0.030	0.030	-0.021	-0.025	-0.014	0.088	0.064	0.097	-0.317	-0.165	-0.288
Median	7.208	9.053	9.572	0.180	0.220	0.221	0.139	0.177	0.184	0.294	0.343	0.374	0.171	0.287	0.254
75 pct	12.450	15.959	16.895	0.380	0.500	0.500	0.342	0.443	0.468	0.592	0.728	0.779	0.627	0.851	0.815
Maximum	647.408	445.256	586.588	30.290	15.260	12.910	28.758	15.264	18.221	35.156	15.979	105.041	205.628	101.652	83.842

	GAAP1-IBES			GAAP2-IBES			GAAP1-CORE			GAAP2-CORE			GAAP1-CE		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	-0.024	-0.087	-0.028	-0.060	-0.174	-0.069	0.077	0.031	0.037	0.041	-0.056	-0.004	-0.175	-0.160	-0.220
sd	1.157	1.487	0.646	1.254	1.636	0.844	0.409	0.666	0.488	0.540	0.859	0.492	0.846	0.856	0.995
Minimum	-52.795	-54.995	-37.397	-52.664	-54.847	-38.291	-5.901	-37.050	-18.191	-43.286	-37.049	-16.836	-54.454	-12.344	-89.111
25 pct	0.000	-0.020	-0.020	-0.015	-0.047	-0.051	0.003	-0.002	-0.003	0.000	0.000	-0.001	-0.222	-0.271	-0.294
Median	0.000	0.000	0.000	-0.001	-0.002	-0.002	0.021	0.004	0.004	0.015	0.000	0.000	-0.093	-0.115	-0.132
75 pct	0.000	0.000	0.000	0.002	0.002	0.003	0.063	0.042	0.034	0.048	0.023	0.009	-0.030	-0.034	-0.044
Maximum	94.878	13.780	28.400	94.865	11.839	23.614	17.365	11.009	29.171	18.866	11.998	16.169	42.925	16.294	28.344

	GAAP2-CE			GAAP1-CF			GAAP2-CF			Price		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	-0.211	-0.247	-0.261	0.204	-0.026	0.273	0.168	-0.113	0.232	25.582	23.992	25.143
sd	0.683	0.467	0.794	4.240	3.446	2.740	4.297	3.567	2.813	51.939	33.520	33.286
Minimum	-57.036	-9.858	-88.501	-192.828	-147.248	-120.609	-192.047	-148.203	-123.281	0.241	0.120	0.320
25 pct	-0.232	-0.286	-0.306	-0.385	-0.557	-0.514	-0.409	-0.609	-0.553	10.170	8.590	8.950
Median	-0.103	-0.129	-0.148	-0.068	-0.134	-0.109	-0.075	-0.146	-0.120	17.990	17.530	18.480
75 pct	-0.038	-0.047	-0.058	0.363	0.224	0.421	0.357	0.214	0.425	29.060	30.500	32.640
Maximum	25.751	2.996	16.215	152.713	89.981	80.417	161.881	89.980	80.417	2411.807	817.990	906.930

The variables are defined as follows: BV = Book value of common equity per share. IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. GAAP1 = Earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. GAAP2 = Income before extraordinary items per share reported under GAAP. Price = Share price at announcement date.

The mean difference in dollar earnings per share between GAAP and non-GAAP measures ranges from -0.143 (GAAP1-CE) to 0.966 (GAAP2-CF) in the pre-GFC period, -0.706 (GAAP2-CF) to -0.138 (GAAP1-CE) during the GFC, and -0.139 (GAAP1-CE) to 0.480 (GAAP2-CF) in the post-GFC period. In the pre- and post-GFC periods, mean GAAP earnings are comparatively higher than non-GAAP earnings, with the exception of CE. The results that mean GAAP earnings is generally higher than non-GAAP earnings in the pre- and post-GFC periods is consistent with the adjustments under non-GAAP earnings that exclude non-recurring revenues and include recurring expenses.

During the GFC, mean GAAP earnings are comparative lower than all non-GAAP earnings. An explanation is that firms generally recognised significant mandated asset writedowns during the GFC, e.g., impairment of goodwill. Comparing across all periods, mean values of IBES, CORE and CE decrease during the GFC but recover in the post GFC period. In contrast, the mean value of CF increases in the GFC period and decreases in the post-GFC period.

Interestingly, mean BV for financial firms remains relatively stable across the three periods. This is notable considering that the financial sector is argued to be the catalyst of the GFC and also the hardest hit by the GFC. Nevertheless, the decreasing standard deviation of BV over time suggests that the book value of equity are overstated before the GFC and that there was a subsequent correction resulting in book values that are closer to the mean. The standard deviation of IBES, CORE, CE and CF also exhibit a similar pattern of decreasing over time.

The mean share price (Price) at earnings announcement date is $51.705 in the pre-GFC period, $40.970 during the GFC and $36.772 in the post-GFC period. This suggests that financial firms have not recovered their market values and that the market may still be concerned about the continuing effects of the GFC in the financial sector.

Panel B show some contrasting results for the non-financial sector compared to the financial sector. With the exception of CF, all other mean earnings continue to increase during the GFC and in the post-GFC period relative to the pre-GFC period. In all periods, however, it appears that CF is the most conservative measure of earnings. When compared to GAAP earnings, CF is lower, on average, in the pre-GFC period. GAAP earnings are also lower, on average, than IBES across the three periods. During the GFC, GAAP earnings are generally lower than non-GAAP earnings except for

GAAP1-CORE and GAAP1-CF. In the post-GFC period, however, GAAP earnings are higher, on average, than CORE (GAAP1-CORE) and CF (GAAP1-CF and GAAP2-CF). Mean Price is comparatively increasing from period to period.

Unlike financial firms, the mean BV for non-financial firms continues to increase from period to period and the standard deviations appear relatively stable. This highlights the different impact the GFC has on the two sectors, where the non-financial sector appears to continue to grow in book value and market value as evidenced by both the mean BV and mean Price continuing to increase over time.

Panel C (S&P 500) and Panel D (non-S&P 500) show results that are generally similar for all non-GAAP earnings. Mean values for all non-GAAP earnings appear to have recovered from the peak of the GFC and mean values in the post-GFC period are higher than the pre-GFC period. Also, the standard deviation has decreased from the pre-GFC period to the post-GFC period.

Mean IBES continue to increase across the three periods. Mean CORE and mean CE decline in the GFC period but recover in the post-GFC period. Mean CF, however, increases during the GFC and decreases in the post-GFC period. GAAP earnings are lower, on average, relative to IBES and CE across all periods while CF is lower than GAAP earnings only in the pre- and post-GFC periods for both samples. CORE is lower than GAAP earnings in the pre-GFC period (GAAP1-CORE and GAAP2-CORE) but lower in the GFC and post-GFC periods only when compared to GAAP2.

Mean BV and its standard deviation for both large and small firms exhibit similar patterns. The market value of large firms also continues to increase, on average, during the GFC and into the post-GFC period. On the other hand, the market value of small firms has recovered from the GFC but is yet to reach its pre-GFC level.

Generally, the results show CORE to be a relatively more conservative earnings measure than IBES across all sample and all periods. CORE is relatively more conservative than GAAP earnings in the pre-GFC period across all samples, however, the results are mixed in the GFC and post-GFC periods, depending on the comparative GAAP measure. CF is the most conservative earnings measure relative to IBES, CORE and CE in the pre- and post-GFC periods.

Table 3.2 shows the correlations among the variables for each period of each sample.

Table 3.2: Pearson Correlations Among Variables

Panel A: Financial Sector Sample (Pre-GFC: N = 4,253; Firms = 242 | GFC: N = 1,234; Firms = 239 | Post-GFC: N = 2,893; Firms = 222)

Pre-GFC

	BV	*IBES*	*CORE*	*CE*	*CF*	*GAAP1*	*GAAP2*	*GAAP1-IBES*	*GAAP2-IBES*	*GAAP1-CORE*	*GAAP2-CORE*	*GAAP1-CE*	*GAAP2-CE*	*GAAP1-CF*	*GAAP2-CF*
IBES	0.574***														
CORE	0.718***	0.679***													
CE	0.719***	0.681***	0.919***												
CF	-0.010	-0.018	-0.017	-0.035*											
GAAP1	0.752***	0.692***	0.961***	0.950***	-0.040**										
GAAP2	0.726***	0.686***	0.949***	0.971***	-0.052***	0.978***									
GAAP1-IBES	0.001	-0.649***	0.077***	0.062***	-0.017	0.099***	0.085***								
GAAP2-IBES	-0.015	-0.638***	0.078***	0.098***	-0.031*	0.091***	0.123***	0.976***							
GAAP1-CORE	0.232***	0.153***	0.011	0.252***	-0.087***	0.288***	0.252***	0.093***	0.058***						
GAAP2-CORE	0.154***	0.144***	0.017	0.328***	-0.116***	0.227***	0.333***	0.041**	0.156***	0.761***					
GAAP1-CE	-0.185***	-0.230***	-0.238***	-0.520***	-0.001	-0.228***	-0.352***	0.078***	-0.058***	0.002	-0.401***				
GAAP2-CE	-0.285***	-0.278***	-0.294***	-0.535***	-0.047**	-0.312***	-0.316***	0.055***	0.045**	-0.109***	-0.124***	0.817***			
GAAP1-CF	0.128***	0.127***	0.167***	0.183***	-0.988***	0.196***	0.205***	0.033*	0.045**	0.130***	0.149***	-0.035*	-0.003		
GAAP2-CF	0.126***	0.127***	0.167***	0.189***	-0.987***	0.195***	0.211***	0.031*	0.050**	0.125***	0.166***	-0.055***	-0.004	0.999***	
Price	0.895***	0.631***	0.774***	0.806***	-0.001	0.813***	0.799***	-0.013	-0.015	0.259***	0.219***	-0.290***	-0.373***	0.129***	0.128***

GFC

	BV	*IBES*	*CORE*	*CE*	*CF*	*GAAP1*	*GAAP2*	*GAAP1-IBES*	*GAAP2-IBES*	*GAAP1-CORE*	*GAAP2-CORE*	*GAAP1-CE*	*GAAP2-CE*	*GAAP1-CF*	*GAAP2-CF*
IBES	-0.021														
CORE	-0.035	0.843***													
CE	-0.231***	0.781***	0.900***												
CF	0.123***	0.032	0.021	0.089**											
GAAP1	-0.282***	0.763***	0.889***	0.983***	0.088**										
GAAP2	-0.281***	0.773***	0.893***	0.992***	0.084**	0.992***									
GAAP1-IBES	-0.412***	0.032	0.407***	0.624***	0.099***	0.671***	0.646***								
GAAP2-IBES	-0.419***	0.065*	0.434***	0.661***	0.095***	0.682***	0.683***	0.979***							
GAAP1-CORE	-0.548***	0.056*	0.033	0.428***	0.150***	0.487***	0.461***	0.688***	0.660***						
GAAP2-CORE	-0.557***	0.101***	0.068*	0.478***	0.145***	0.499***	0.509***	0.654***	0.685***	0.959***					
GAAP1-CE	-0.291***	-0.048	-0.002	-0.028	-0.004	0.156***	0.064*	0.297***	0.156***	0.345***	0.145***				
GAAP2-CE	-0.434***	0.090**	0.119***	0.127***	-0.025	0.256***	0.254***	0.292***	0.296***	0.331***	0.336***	0.704***			
GAAP1-CF	-0.224***	0.256***	0.314***	0.284***	-0.927***	0.292***	0.292***	0.157***	0.165***	0.039	0.048	0.062*	0.120***		
GAAP2-CF	-0.225***	0.263***	0.319***	0.291***	-0.926***	0.293***	0.300***	0.151***	0.168***	0.031	0.055	0.028	0.121***	0.999***	
Price	0.910***	0.032	0.002	-0.150***	0.058*	-0.209***	-0.203***	-0.360***	-0.356***	-0.461***	-0.454***	-0.329***	-0.435***	-0.134***	-0.132***

Post-GFC

	BV	*IBES*	*CORE*	*CE*	*CF*	*GAAP1*	*GAAP2*	*GAAP1-IBES*	*GAAP2-IBES*	*GAAP1-CORE*	*GAAP2-CORE*	*GAAP1-CE*	*GAAP2-CE*	*GAAP1-CF*	*GAAP2-CF*
IBES	0.376***														
CORE	0.389***	0.882***													
CE	0.388***	0.571***	0.668***												
CF	0.033	0.095***	0.090***	0.054**											
GAAP1	0.439***	0.764***	0.828***	0.646***	0.040*										
GAAP2	0.435***	0.781***	0.843***	0.731***	0.070***	0.889***									
GAAP1-IBES	0.196***	-0.099***	0.150***	0.267***	-0.059**	0.567***	0.373***								
GAAP2-IBES	0.210***	-0.042*	0.209***	0.431***	-0.010	0.436***	0.591***	0.726***							
GAAP1-CORE	0.181***	-0.001	-0.068***	0.119***	-0.068***	0.503***	0.283***	0.777***	0.454***						
GAAP2-CORE	0.197***	0.066***	-0.004	0.308***	-0.011	0.352***	0.535***	0.458***	0.770***	0.632***					
GAAP1-CE	-0.155***	-0.135***	-0.210***	-0.790***	-0.038*	-0.043*	-0.243***	0.105***	-0.215***	0.247***	-0.121***				
GAAP2-CE	-0.165***	-0.116***	-0.201***	-0.783***	-0.014	-0.126***	-0.148***	-0.047*	-0.087***	0.085***	0.041*	0.924***			
GAAP1-CF	0.102***	0.142***	0.166***	0.146***	-0.952***	0.267***	0.204***	0.230***	0.143***	0.219***	0.118***	0.023	-0.025		
GAAP2-CF	0.105***	0.154***	0.178***	0.179***	-0.949***	0.242***	0.247***	0.175***	0.196***	0.155***	0.180***	-0.040*	-0.033	0.989***	
Price	0.829***	0.468***	0.467***	0.412***	0.021	0.502***	0.496***	0.176***	0.189***	0.172***	0.188***	-0.136***	-0.145***	0.133***	0.136***

Panel B: Non-Financial Sector Sample (Pre-GFC: N = 35,216; Firms = 1,850 | GFC: N = 9,106; Firms = 1,804 | Post-GFC: N = 20,477; Firms = 1,678)

Pre-GFC

	BV	*IBES*	*CORE*	*CE*	*CF*	*GAAP1*	*GAAP2*	*GAAP1-IBES*	*GAAP2-IBES*	*GAAP1-CORE*	*GAAP2-CORE*	*GAAP1-CE*	*GAAP2-CE*	*GAAP1-CF*	*GAAP2-CF*
IBES	0.205***														
CORE	-0.217***	0.722***													
CE	-0.006	0.667***	0.836***												
CF	0.022***	0.101***	0.103***	0.137***											
GAAP1	-0.156***	0.764***	0.946***	0.823***	0.127***										
GAAP2	-0.158***	0.700***	0.933***	0.904***	0.103***	0.901***									
GAAP1-IBES	-0.477***	0.034***	0.636***	0.508***	0.081***	0.670***	0.590***								
GAAP2-IBES	-0.409***	0.058***	0.640***	0.649***	0.051***	0.556***	0.754***	0.795***							
GAAP1-CORE	0.234***	-0.101***	-0.451***	-0.289***	0.033***	-0.138***	-0.372***	-0.098***	-0.427***						
GAAP2-CORE	0.153***	-0.028***	-0.141***	0.223***	0.003	-0.083***	0.224***	-0.098***	0.339***	0.201***					
GAAP1-CE	-0.212***	-0.084***	-0.122***	-0.586***	-0.060***	-0.022***	-0.305***	0.063***	-0.350***	0.311***	-0.512***				
GAAP2-CE	-0.323***	-0.064***	0.040***	-0.406***	-0.100***	0.001	0.024***	0.075***	0.093***	-0.119***	-0.041***	0.716***			
GAAP1-CF	-0.092***	0.251***	0.331***	0.244***	-0.893***	0.333***	0.311***	0.228***	0.204***	-0.094***	-0.040***	0.047***	0.096***		
GAAP2-CF	-0.099***	0.255***	0.368***	0.322***	-0.870***	0.330***	0.401***	0.219***	0.327***	-0.215***	0.109***	-0.096***	0.104***	0.977***	
Price	0.761***	0.128***	-0.301***	-0.125***	-0.033***	-0.247***	-0.225***	-0.531***	-0.433***	0.239***	0.195***	-0.134***	-0.190***	-0.081***	-0.082***

GFC

	BV	*IBES*	*CORE*	*CE*	*CF*	*GAAP1*	*GAAP2*	*GAAP1-IBES*	*GAAP2-IBES*	*GAAP1-CORE*	*GAAP2-CORE*	*GAAP1-CE*	*GAAP2-CE*	*GAAP1-CF*	*GAAP2-CF*
IBES	0.252***														
CORE	-0.046***	0.630***													
CE	0.115***	0.612***	0.871***												
CF	0.070***	0.098***	0.122***	0.108***											
GAAP1	0.006	0.641***	0.971***	0.852***	0.140***										
GAAP2	-0.049***	0.593***	0.911***	0.950***	0.091***	0.876***									
GAAP1-IBES	-0.204***	-0.005	0.736***	0.595***	0.099***	0.764***	0.643***								
GAAP2-IBES	-0.233***	0.054***	0.700***	0.761***	0.046***	0.650***	0.836***	0.802***							
GAAP1-CORE	0.218***	-0.007	-0.197***	-0.148***	0.065***	0.041***	-0.216***	0.059***	-0.263***						
GAAP2-CORE	-0.022*	0.110***	0.101***	0.467***	-0.036***	0.077***	0.502***	0.009	0.548***	-0.107***					
GAAP1-CE	-0.209***	-0.173***	-0.153***	-0.584***	0.011	-0.072***	-0.451***	0.052***	-0.442***	0.345***	-0.770***				
GAAP2-CE	-0.519***	-0.149***	-0.004	-0.298***	-0.069***	-0.049***	0.014	0.061***	0.118***	-0.188***	0.040***	0.491***			
GAAP1-CF	-0.063***	0.215***	0.352***	0.308***	-0.879***	0.349***	0.336***	0.274***	0.270***	-0.042***	0.071***	-0.045***	0.041***		
GAAP2-CF	-0.089***	0.229***	0.378***	0.411***	-0.847***	0.343***	0.453***	0.254***	0.405***	-0.173***	0.301***	-0.251***	0.069***	0.967***	
Price	0.725***	0.342***	-0.004	0.118***	0.000	0.023*	0.015	-0.257***	-0.214***	0.114***	0.046***	-0.189***	-0.332***	0.011	0.008

Post- GFC

	BV	*IBES*	*CORE*	*CE*	*CF*	*GAAP1*	*GAAP2*	*GAAP1-IBES*	*GAAP2-IBES*	*GAAP1-CORE*	*GAAP2-CORE*	*GAAP1-CE*	*GAAP2-CE*	*GAAP1-CF*	*GAAP2-CF*
IBES	0.553***														
CORE	0.420***	0.739***													
CE	0.532***	0.685***	0.851***												
CF	0.018*	0.118***	0.064***	0.053***											
GAAP1	0.482***	0.788***	0.917***	0.806***	0.085***										
GAAP2	0.371***	0.668***	0.918***	0.915***	0.047***	0.839***									
GAAP1-IBES	0.028***	-0.084***	0.479***	0.372***	-0.024***	0.547***	0.449***								
GAAP2-IBES	-0.015*	-0.030***	0.548***	0.593***	-0.046***	0.396***	0.723***	0.681***							
GAAP1-CORE	0.039***	-0.069***	-0.430***	-0.309***	0.032***	-0.034***	-0.402***	0.039***	-0.476***						
GAAP2-CORE	-0.027***	-0.012	0.019**	0.354***	-0.027***	0.010	0.414***	0.033***	0.567***	-0.026***					
GAAP1-CE	-0.318***	-0.213***	-0.337***	-0.716***	0.012	-0.163***	-0.535***	0.025***	-0.522***	0.474***	-0.577***				
GAAP2-CE	-0.521***	-0.271***	-0.150***	-0.523***	-0.029***	-0.206***	-0.134***	0.034***	0.071***	-0.091***	0.005	0.628***			
GAAP1-CF	0.138***	0.139***	0.234***	0.209***	-0.947***	0.240***	0.225***	0.200***	0.173***	-0.042***	0.029***	-0.064***	-0.038***		
GAAP2-CF	0.124***	0.142***	0.289***	0.298***	-0.925***	0.239***	0.335***	0.193***	0.319***	-0.183***	0.182***	-0.215***	-0.023***	0.978***	
Price	0.681***	0.700***	0.504***	0.529***	0.031***	0.570***	0.461***	-0.029***	-0.030***	0.027***	0.006	-0.209***	-0.324***	0.153***	0.146***

Panel C: S&P 500 Sample (Pre-GFC: N = 7,908; Firms = 416 | GFC: N = 2,193; Firms = 419 | Post-GFC: N = 5,532; Firms = 424)

Pre-GFC

	BV	*IBES*	*CORE*	*CE*	*CF*	*GAAP1*	*GAAP2*	*GAAP1-IBES*	*GAAP2-IBES*	*GAAP1-CORE*	*GAAP2-CORE*	*GAAP1-CE*	*GAAP2-CE*	*GAAP1-CF*	*GAAP2-CF*
IBES	0.899***														
CORE	0.768***	0.862***													
CE	0.742***	0.825***	0.913***												
CF	0.001	-0.007	-0.021	-0.018											
GAAP1	0.854***	0.944***	0.896***	0.862***	-0.031**										
GAAP2	0.699***	0.806***	0.942***	0.955***	-0.028*	0.863***									
GAAP1-IBES	-0.098***	-0.126***	0.138***	0.148***	-0.073***	0.208***	0.206***								
GAAP2-IBES	-0.074***	-0.035**	0.387***	0.461***	-0.038***	0.138***	0.564***	0.522***							
GAAP1-CORE	0.001	-0.028*	-0.436***	-0.307***	-0.014	0.009	-0.374***	0.111***	-0.592***						
GAAP2-CORE	-0.048***	0.008	0.033**	0.314***	-0.025*	0.084***	0.366***	0.230***	0.606***	0.095***					
GAAP1-CE	-0.208***	-0.238***	-0.476***	-0.691***	-0.010	-0.230***	-0.605***	0.012	-0.689***	0.604***	-0.483***				
GAAP2-CE	-0.404***	-0.366***	-0.256***	-0.506***	-0.024*	-0.323***	-0.228***	0.112***	0.125***	-0.078***	0.033**	0.511***			
GAAP1-CF	0.133***	0.154***	0.161***	0.152***	-0.988***	0.186***	0.163***	0.104***	0.059***	0.016	0.038***	-0.026*	-0.027*		
GAAP2-CF	0.129***	0.156***	0.195***	0.194***	-0.983***	0.190***	0.213***	0.109***	0.142***	-0.055***	0.093***	-0.102***	-0.018	0.996***	
Price	0.929***	0.893***	0.766***	0.716***	-0.006	0.846***	0.697***	-0.106***	-0.069***	-0.010	-0.047***	-0.168***	-0.322***	0.138***	0.135***

GFC

	BV	*IBES*	*CORE*	*CE*	*CF*	*GAAP1*	*GAAP2*	*GAAP1-IBES*	*GAAP2-IBES*	*GAAP1-CORE*	*GAAP2-CORE*	*GAAP1-CE*	*GAAP2-CE*	*GAAP1-CF*	*GAAP2-CF*
IBES	-0.081***														
CORE	-0.143***	0.881***													
CE	-0.169***	0.817***	0.860***												
CF	0.119***	0.066**	0.057**	0.132***											
GAAP1	-0.338***	0.839***	0.885***	0.886***	0.144***										
GAAP2	-0.346***	0.789***	0.879***	0.947***	0.116***	0.923***									
GAAP1-IBES	-0.498***	0.298***	0.519***	0.595***	0.175***	0.770***	0.693***								
GAAP2-IBES	-0.462***	0.285***	0.539***	0.705***	0.119***	0.647***	0.814***	0.800***							
GAAP1-CORE	-0.476***	0.332***	0.236***	0.464***	0.209***	0.661***	0.511***	0.770***	0.483***						
GAAP2-CORE	-0.483***	0.339***	0.353***	0.680***	0.150***	0.597***	0.756***	0.649***	0.859***	0.678***					
GAAP1-CE	-0.301***	-0.113***	-0.113***	-0.414***	-0.001	0.055**	-0.228***	0.230***	-0.248***	0.298***	-0.291***				
GAAP2-CE	-0.550***	-0.072***	0.077***	-0.144***	-0.045*	0.132***	0.181***	0.316***	0.350***	0.152***	0.249***	0.568***			
GAAP1-CF	-0.211***	0.160***	0.182***	0.107***	-0.964***	0.126***	0.133***	0.033	0.055**	-0.031	0.010	0.016	0.081***		
GAAP2-CF	-0.220***	0.167***	0.203***	0.148***	-0.956***	0.129***	0.179***	0.031	0.122***	-0.057**	0.073***	-0.066**	0.098***	0.994***	
Price	0.850***	0.101***	0.027	0.014	0.036	-0.142***	-0.143***	-0.367***	-0.319***	-0.340***	-0.318***	-0.308***	-0.485***	-0.074***	-0.078***

Post-GFC

	BV	*IBES*	*CORE*	*CE*	*CF*	*GAAP1*	*GAAP2*	*GAAP1-IBES*	*GAAP2-IBES*	*GAAP1-CORE*	*GAAP2-CORE*	*GAAP1-CE*	*GAAP2-CE*	*GAAP1-CF*	*GAAP2-CF*
IBES	0.396***														
CORE	0.344***	0.869***													
CE	0.510***	0.731***	0.807***												
CF	0.056***	0.107***	0.125***	0.092***											
GAAP1	0.303***	0.885***	0.923***	0.789***	0.124***										
GAAP2	0.293***	0.762***	0.895***	0.879***	0.090***	0.859***									
GAAP1-IBES	-0.084***	0.045***	0.369***	0.338***	0.068***	0.505***	0.431***								
GAAP2-IBES	-0.051***	-0.095***	0.276***	0.426***	0.004	0.201***	0.572***	0.605***							
GAAP1-CORE	-0.050***	0.185***	-0.034*	0.088***	0.018	0.354***	0.055***	0.415***	-0.150***						
GAAP2-CORE	-0.032*	-0.030*	0.007	0.357***	-0.048***	0.080***	0.451***	0.227***	0.732***	0.193***					
GAAP1-CE	-0.451***	-0.080***	-0.156***	-0.637***	0.006	-0.030*	-0.353***	0.084***	-0.442***	0.301***	-0.480***				
GAAP2-CE	-0.567***	-0.238***	-0.173***	-0.600***	-0.039**	-0.196***	-0.146***	0.021	0.077***	-0.090***	0.017	0.731***			
GAAP1-CF	0.025	0.130***	0.122***	0.119***	-0.964***	0.144***	0.140***	0.068***	0.050***	0.077***	0.069***	-0.013	-0.013		
GAAP2-CF	0.026	0.106***	0.125***	0.153***	-0.961***	0.116***	0.188***	0.053***	0.155***	-0.002	0.172***	-0.103***	-0.002	0.990***	
Price	0.489***	0.699***	0.644***	0.610***	0.044**	0.608***	0.568***	0.009	-0.012	0.015	-0.015	-0.228***	-0.312***	0.119***	0.115***

Panel D: Non-S&P 500 Sample (Pre-GFC: N = 31,561; Firms = 1,771 | GFC: N = 8,147; Firms = 1,665 | Post-GFC: N = 17,838; Firms = 1,530)

Pre-GFC

	BV	*IBES*	*CORE*	*CE*	*CF*	*GAAP1*	*GAAP2*	*GAAP1-IBES*	*GAAP2-IBES*	*GAAP1-CORE*	*GAAP2-CORE*	*GAAP1-CE*	*GAAP2-CE*	*GAAP1-CF*	*GAAP2-CF*
IBES	0.260***														
CORE	-0.051***	0.613***													
CE	0.108***	0.587***	0.841***												
CF	-0.005	0.033***	0.068***	0.075***											
GAAP1	0.043***	0.647***	0.962***	0.859***	0.064***										
GAAP2	0.029***	0.620***	0.936***	0.910***	0.045***	0.939***									
GAAP1-IBES	-0.245***	-0.354***	0.477***	0.381***	0.040***	0.485***	0.441***								
GAAP2-IBES	-0.240***	-0.305***	0.488***	0.484***	0.019***	0.456***	0.558***	0.909***							
GAAP1-CORE	0.337***	-0.003	-0.326***	-0.101***	-0.026***	-0.056***	-0.172***	-0.066***	-0.205***						
GAAP2-CORE	0.223***	0.046***	-0.137***	0.232***	-0.062***	-0.023***	0.220***	-0.081***	0.218***	0.422***					
GAAP1-CE	-0.139***	-0.061***	-0.028***	-0.512***	-0.039***	0.000	-0.202***	0.070***	-0.181***	0.103***	-0.492***				
GAAP2-CE	-0.198***	-0.037***	0.052***	-0.390***	-0.082***	0.016**	0.026***	0.062***	0.071***	-0.137***	-0.071***	0.787***			
GAAP1-CF	0.019***	0.184***	0.256***	0.215***	-0.943***	0.273***	0.271***	0.123***	0.134***	0.006	0.052***	0.038***	0.084***		
GAAP2-CF	0.015**	0.188***	0.267***	0.251***	-0.935***	0.272***	0.311***	0.118***	0.179***	-0.036***	0.137***	-0.034***	0.087***	0.993***	
Price	0.752***	0.194***	-0.202***	-0.018**	-0.019***	-0.107***	-0.099***	-0.354***	-0.325***	0.368***	0.282***	-0.145***	-0.177***	-0.018**	-0.017**

GFC

	BV	*IBES*	*CORE*	*CE*	*CF*	*GAAP1*	*GAAP2*	*GAAP1-IBES*	*GAAP2-IBES*	*GAAP1-CORE*	*GAAP2-CORE*	*GAAP1-CE*	*GAAP2-CE*	*GAAP1-CF*	*GAAP2-CF*
IBES	0.152***														
CORE	-0.012	0.702***													
CE	-0.049***	0.643***	0.895***												
CF	0.098***	0.054***	0.080***	0.074***											
GAAP1	-0.098***	0.662***	0.943***	0.920***	0.088***										
GAAP2	-0.101***	0.647***	0.916***	0.977***	0.068***	0.937***									
GAAP1-IBES	-0.273***	-0.058***	0.596***	0.622***	0.067***	0.709***	0.639***								
GAAP2-IBES	-0.263***	-0.007	0.601***	0.732***	0.043***	0.662***	0.758***	0.888***							
GAAP1-CORE	-0.256***	-0.109***	-0.155***	0.088***	0.025*	0.182***	0.074***	0.345***	0.190***						
GAAP2-CORE	-0.226***	0.004	-0.008	0.385***	-0.014	0.174***	0.394***	0.227***	0.513***	0.539***					
GAAP1-CE	-0.102***	-0.109***	-0.102***	-0.424***	0.015	-0.036**	-0.327***	0.054***	-0.336***	0.196***	-0.582***				
GAAP2-CE	-0.237***	-0.037***	0.019	-0.194***	-0.034**	-0.006	0.020	0.026*	0.057***	-0.074***	0.006	0.482***			
GAAP1-CF	-0.141***	0.334***	0.473***	0.465***	-0.820***	0.499***	0.480***	0.350***	0.343***	0.083***	0.112***	-0.034**	0.026*		
GAAP2-CF	-0.143***	0.344***	0.484***	0.526***	-0.800***	0.489***	0.544***	0.328***	0.420***	0.024*	0.249***	-0.210***	0.040***	0.978***	
Price	0.738***	0.197***	-0.036**	-0.024*	0.022	-0.085***	-0.067***	-0.298***	-0.256***	-0.146***	-0.084***	-0.136***	-0.195***	-0.068***	-0.058***

Post-GFC

	BV	*IBES*	*CORE*	*CE*	*CF*	*GAAP1*	*GAAP2*	*GAAP1-IBES*	*GAAP2-IBES*	*GAAP1-CORE*	*GAAP2-CORE*	*GAAP1-CE*	*GAAP2-CE*	*GAAP1-CF*	*GAAP2-CF*
IBES	0.478***														
CORE	0.381***	0.725***													
CE	0.420***	0.600***	0.773***												
CF	0.006	0.116***	0.045***	0.035***											
GAAP1	0.488***	0.721***	0.875***	0.729***	0.042***										
GAAP2	0.390***	0.661***	0.899***	0.837***	0.036***	0.843***									
GAAP1-IBES	0.144***	-0.129***	0.411***	0.346***	-0.075***	0.595***	0.439***								
GAAP2-IBES	0.096***	-0.007	0.555***	0.582***	-0.055***	0.483***	0.746***	0.699***							
GAAP1-CORE	0.141***	-0.124***	-0.397***	-0.207***	-0.013	0.098***	-0.251***	0.283***	-0.224***						
GAAP2-CORE	0.115***	0.034***	0.018*	0.339***	-0.010	0.145***	0.454***	0.167***	0.575***	0.236***					
GAAP1-CE	-0.155***	-0.200***	-0.307***	-0.772***	-0.012	-0.127***	-0.430***	0.051***	-0.394***	0.390***	-0.356***				
GAAP2-CE	-0.210***	-0.154***	-0.129***	-0.631***	-0.014	-0.130***	-0.103***	-0.007	-0.000	0.020**	0.028***	0.793***			
GAAP1-CF	0.159***	0.133***	0.252***	0.212***	-0.941***	0.298***	0.250***	0.272***	0.216***	0.045***	0.058***	-0.031***	-0.031***		
GAAP2-CF	0.150***	0.157***	0.318***	0.302***	-0.917***	0.298***	0.367***	0.245***	0.350***	-0.088***	0.191***	-0.160***	-0.029***	0.976***	
Price	0.762***	0.574***	0.406***	0.411***	0.015	0.486***	0.401***	0.029***	0.025***	0.085***	0.089***	-0.144***	-0.178***	0.150***	0.147***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The variables are defined as follows: BV = Book value of common equity per share. IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. GAAP1 = Earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. GAAP2 = Income before extraordinary items per share reported under GAAP. Price = Share price at announcement date.

The earnings measures are generally highly correlated. Consequently, the differential variables are also generally highly correlated with earnings. There are, however, some interesting exceptions. In Panel A, BV is negatively correlated with all the earnings measures except CF during the GFC. In the post-GFC period, however, BV is positively correlated with earnings except for GAAP1-CE and GAAP2-CE. While Price is significantly correlated with most earnings variables across all periods, it is most highly correlated with BV. Similar correlations are observed among the other samples. BV is primarily negatively correlated with the earnings measures during the GFC. Also, Price is generally most highly correlated with BV.

3.3 MULTIVARIATE OLS REGRESSIONS

In the tables presenting the regression results, the corresponding NonGAAPE measures in Equations 2.1 and 2.2 are IBES, CORE, CE and CF. The corresponding DIFF measures are DIFF1 and DIFF2 for Equation 2.1 (denoted as Model 1 in tables) and Equation 2.2 (denoted as Model 2 in tables), respectively.

As discussed in Chapter 2, I evaluate model performance using BIC. Based on BIC, the model with the lowest BIC value is the best fitting model. BIC values are reported in the tables with model estimates. Furthermore, using the differences in BIC values between models, Raftery (1995) provides an approximation of this difference to conventional *t* values. For comparative purposes, I present the absolute value of the differences in BIC values in separate tables. Coupled with the approximation to *t* values from Raftery (1995), these differences indicate the strength of the evidence in relation to model performance.

Table 3.3 presents a summary of the two highest ranked models for all samples and periods that I test in this section. The summary shows that the IBES models generally outperform other models except in the financial sector sample.

Table 3.3: Summary of Two Highest Ranked Models for All Samples (Comparison of Model Performance using BIC)

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Financial								
- Pre-GFC					2	1		
					(164)	(1)		
- GFC					2			1
					(1)			(4)
- Post-GFC	1	2						
	(8)	(30)						
Non-Financial								
- Pre-GFC	1			2				
	(1,149)			(370)				
- GFC	1	2						
	(205)	(505)						
- Post-GFC	2	1						
	(3,594)	(4)						
S&P 500								
- Pre-GFC	2	1						
	(401)	(6)						
- GFC							2	1
							(29)	(9)
- Post-GFC	2	1						
	(513)	(40)						
Non-S&P 500								
- Pre-GFC	2			1				
	(141)			(186)				
- GFC	1	2						
	(97)	(71)						
- Post-GFC	2	1						
	(34)	(2)						

Models ranked 1 and 2 by their BIC are shown. The absolute difference in BIC values between the model and the next lower ranked model is shown in parentheses. The different grades of evidence corresponding to minimum BIC difference according to Raftery (1995) are:

Minimum BIC Difference of 0: Weak
Minimum BIC Difference of 2: Positive
Minimum BIC Difference of 6: Strong
Minimum BIC Difference of 10: Very Strong

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP.

Interestingly, in the financial sample, it appears that investors place relatively little emphasis on I/B/E/S earnings until after the GFC. Generally, the results for the non-financial sector, the S&P 500, and the non-S&P 500 samples are consistent with prior studies (e.g., Bradshaw and Sloan, 2002; Brown and Sivakumar, 2003), which find that I/B/E/S earnings are more value relevant than GAAP earnings. However, my results do not support Albring *et al*. (2010), which find that S&P Core Earnings are more value relevant than I/B/E/S earnings.

A summary of statistically significant key variables with a p = 0.05 or stronger is presented in Table 3.4. Overall, it highlights the impact of the GFC on the value relevance of GAAP and non-GAAP earnings.

Table 3.4: Summary of Significant Key Variables for Multivariate OLS Regression Results by Sample, Period and Model

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Financial Sector Sample

		Independent Variables					
		Model 1			Model 2		
		BV	NonGAAPE	DIFF	BV	NonGAAPE	DIFF
Pre-GFC	IBES	sig	sig	sig	sig	sig	sig
	CORE	sig	sig	sig	sig	sig	sig
	CE	sig	sig		sig	sig	
	CF	sig	sig	sig	sig	sig	sig
GFC	IBES	sig	sig		sig	sig	
	CORE	sig			sig		sig
	CE	sig			sig	sig	
	CF	sig			sig		
Post-GFC	IBES	sig	sig		sig	sig	
	CORE	sig	sig	sig	sig	sig	
	CE	sig	sig	sig	sig	sig	sig
	CF	sig	sig	sig	sig	sig	sig

Panel B: Non-Financial Sector Sample

		Independent Variables					
		Model 1			Model 2		
		BV	NonGAAPE	DIFF	BV	NonGAAPE	DIFF
Pre-GFC	IBES	sig		sig	sig		
	CORE	sig			sig		sig
	CE	sig			sig		
	CF	sig			sig		
GFC	IBES	sig	sig	sig	sig	sig	
	CORE	sig			sig		sig
	CE	sig			sig		
	CF	sig			sig		
Post-GFC	IBES	sig	sig		sig	sig	
	CORE	sig	sig	sig	sig	sig	
	CE	sig	sig	sig	sig	sig	sig
	CF	sig	sig	sig	sig	sig	

Panel C: S&P 500 Sample

		Independent Variables					
		Model 1			Model 2		
		BV	NonGAAPE	DIFF	BV	NonGAAPE	DIFF
Pre-GFC	IBES	sig	sig		sig	sig	
	CORE	sig	sig	sig	sig	sig	
	CE	sig	sig	sig	sig	sig	sig
	CF	sig	sig	sig	sig	sig	sig
GFC	IBES	sig	sig		sig	sig	
	CORE	sig	sig		sig	sig	
	CE	sig	sig		sig	sig	
	CF	sig	sig	sig	sig	sig	sig
Post-GFC	IBES	sig	sig		sig	sig	
	CORE	sig	sig		sig	sig	
	CE	sig	sig	sig	sig	sig	sig
	CF	sig	sig	sig	sig	sig	sig

Panel D: Non-S&P 500 Sample

		Independent Variables					
		Model 1			Model 2		
		BV	NonGAAPE	DIFF	BV	NonGAAPE	DIFF
Pre-GFC	IBES	sig			sig		
	CORE	sig			sig		sig
	CE	sig			sig		
	CF	sig			sig		
GFC	IBES	sig			sig		
	CORE	sig			sig		sig
	CE	sig			sig		
	CF	sig			sig		
Post-GFC	IBES	sig	sig		sig	sig	
	CORE	sig			sig		
	CE	sig			sig		
	CF	sig			sig		

sig indicates the variable is statistically significant and positive at p = 0.05 or stronger. sig (-) indicates the variable is statistically significant and negative at p = 0.05 or stronger. The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP.

In the financial sector sample, it appears that there is a shift away from GAAP and non-GAAP earnings in the GFC period as investors place greater emphasis on the book value of equity during the period of uncertainty. In the post-GFC period, however, investors switch their emphasis back to GAAP and non-GAAP earnings. In the non-financial sector sample, it appears that investors generally place little emphasis on GAAP and non-GAAP earnings in the pre-GFC and GFC periods. However, in the post-GFC period, investors appear to place comparatively greater emphasis on both GAAP and non-GAAP earnings relative to the pre-GFC and GFC periods. The GFC appears to have little impact on the emphasis investors place on GAAP and non-GAAP earnings in the S&P 500 and non-S&P 500 samples.

3.3.1 Financial Sector Sample

Table 3.5 shows the regression results with clustered standard errors, on both firm and time (fiscal quarters), for the financial sector sample. All models are statistically significant with an adjusted R^2 ranging between 0.8460 to 0.8556 in the pre-GFC period (Panel A), 0.8310 to 0.8356 in the GFC period (Panel B) and 0.7100 to 0.7180 in the post-GFC period (Panel C).[16] Panel A shows the results for the pre-GFC period. All non-GAAP earnings are marginally significant. DIFF1 and DIFF2 for IBES, CORE and CF models are also marginally significant. The results show that GAAP earnings have incremental value relevance over IBES, CORE and CF. GAAP earnings, however, do not have incremental value relevance over CE.

In the GFC period, only IBES is strongly significant. DIFF1 and DIFF2, however, are marginally significant in the CORE and CE models, respectively. As the sample size for this period is relatively small, the results should be interpreted with caution.

In the post-GFC period, all non-GAAP earnings are significant for both Model 1 and Model 2. The level of significance for non-GAAP earnings in this period is also stronger in comparison to the pre-GFC period. DIFF1 is marginally significant relative to CORE (at 0.05), and both DIFF1 and DIFF2 are moderately to strongly significant relative to CE and CF indicating that GAAP earnings have incremental value relevance over these earnings measures, but not over IBES.

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[16] I test for multicollinearity using the variance inflation factor (VIF) and Condition Index due to the significant correlation between the independent variables in the correlations results. Across the samples for IBES, CORE and CE, for all periods, the highest mean VIF is 3.024 and the highest Condition Index is 4.092 suggesting that multicollinearity is not a significant problem. For CF, however, the highest mean VIF is 62.559 and the highest Condition Index is 19.380 in the pre-GFC period. While mean Condition Index is within the tolerable limit of 30 (Belsley *et al.*, 1980), the VIF is relatively high and indicates potential multicollinearity problems. Therefore, the results for CF in the pre-GFC period should be interpreted with caution. The highest mean VIF and Condition Index for CF in the GFC and post-GFC period is 9.220 and 7.211, respectively.

Table 3.5: Ohlson Model: Financial Sector Sample - Multivariate OLS Regression at Earnings Announcement Date

(Pre-GFC: Firm cluster = 242 and Time cluster = 25; GFC: Firm cluster = 239 and Time cluster = 9; Post-GFC: Firm cluster = 222 and Time cluster = 16)

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	1.061***	1.079***	1.073***	1.099***	1.069***	1.077***	1.073***	1.093***
	(3.43)	(3.65)	(3.48)	(3.72)	(3.89)	(4.01)	(3.49)	(3.76)
NonGAAPE	14.210*	13.835*	13.578*	13.041*	12.869*	12.395*	13.946*	13.540*
	(2.27)	(2.34)	(2.19)	(2.28)	(2.42)	(2.32)	(2.27)	(2.37)
DIFF	12.110*	11.814*	16.058*	14.743*	0.968	-1.302	13.818*	13.384*
	(2.33)	(2.40)	(2.12)	(2.19)	(0.25)	(-0.23)	(2.25)	(2.36)
Intercept	9.029**	8.775**	8.957*	8.655*	8.202**	8.111**	9.006*	8.720*
	(2.60)	(2.62)	(2.46)	(2.48)	(2.71)	(2.65)	(2.56)	(2.57)
Adj R^2	0.8479	0.8500	0.8460	0.8481	0.8556	0.8556	0.8461	0.8485
BIC	43234	43177	43287	43229	43013	43012	43284	43219
BIC Rank	6	3	8	5	2	1	7	4

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	1.049***	1.054***	1.075***	1.088***	1.033***	1.031***	1.068***	1.070***
	(10.87)	(10.83)	(10.45)	(10.59)	(11.05)	(10.36)	(11.67)	(11.74)
NonGAAPE	0.998***	0.976***	0.559	0.511	0.842	0.959*	0.517	0.590
	(4.28)	(4.55)	(1.30)	(1.24)	(1.77)	(2.09)	(0.97)	(1.15)
DIFF	0.373	0.613	1.739	2.383*	-5.034*	-5.724	0.876	0.952
	(0.42)	(0.64)	(1.65)	(2.48)	(-2.28)	(-1.27)	(1.46)	(1.62)
Intercept	10.752***	10.720***	10.419***	10.211***	10.609***	10.447***	10.668***	10.638***
	(3.78)	(3.76)	(3.39)	(3.40)	(3.86)	(3.80)	(3.75)	(3.75)
Adj R^2	0.8310	0.8314	0.8314	0.8331	0.8356	0.8341	0.8344	0.8351
BIC	11621	11618	11618	11605	11587	11598	11588	11583
BIC Rank	8	6	6	5	2	4	3	1

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	0.761***	0.764***	0.764***	0.767***	0.766***	0.771***	0.768***	0.770***
	(9.67)	(9.66)	(9.36)	(9.26)	(8.69)	(8.82)	(9.19)	(8.97)
NonGAAPE	6.689***	6.542***	5.946***	5.807***	4.946***	4.713**	4.845***	4.586**
	(4.10)	(4.47)	(3.80)	(4.03)	(3.90)	(3.22)	(3.82)	(3.15)
DIFF	2.148	1.759	2.515*	2.095	4.656***	4.731**	4.944***	4.834***
	(1.86)	(1.02)	(2.38)	(0.98)	(5.86)	(3.15)	(4.07)	(3.36)
Intercept	12.383***	12.334***	12.762***	12.722***	12.989***	12.907***	12.964***	12.900***
	(5.87)	(5.78)	(5.98)	(5.94)	(6.06)	(6.09)	(6.12)	(6.13)
Adj R^2	0.7180	0.7173	0.7143	0.7136	0.7111	0.7100	0.7111	0.7102
BIC	26467	26475	26505	26512	26529	26548	26537	26546
BIC Rank	1	2	3	4	5	8	6	7

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP.

Most notably, the results show that investors are valuing the firms predominantly on book value of equity – BV is highly significant across all models and time periods. The results also show some evidence of a shift in investors' focus on the different measures of earnings for financial firms. There is an increase in the level of significance, from marginal to strong, for IBES and CORE earnings between pre- and post-GFC. Of these two earnings measures, GAAP earnings have incremental value relevance only in respect to CORE. Additionally, IBES and CORE achieve a mid to lower ranking based on BIC in the pre-GFC period and improve to top ranking in the post-GFC period. While the results do not show a general shift in investors' emphasis to GAAP earnings, it does show a clear increase in investors' emphasis on non-GAAP earnings. In the post-GFC period, NonGAAPE is moderately to strongly significant across all models but it is only marginally significant in the pre-GFC period. However, it does not appear that investors are placing much emphasis on GAAP earnings in the post-GFC period relative to IBES and CORE earnings. In the pre- and post-GFC periods, the BIC rankings suggest that IBES generally ranked higher than CORE.

Table 3.6 show the difference in BIC between models, which indicates how much better a model fit is relative to another model. The results generally indicate that model performance between the various earnings measures is strong to very strong. In the GFC, both CE and CF outperform the other models. This result is consistent with investors focusing on cash flows during the GFC. Based on BIC, there is evidence that investors place greater emphasis on CF and CE before and during the GFC but place greater emphasis on IBES after the GFC. Overall, The differences in BIC, indicating the grade of evidence between the models, are generally strong to very strong.

Table 3.6: Ohlson Model: Financial Sector Sample - Difference in BIC between Models
(Comparison of Model Performance using BIC)

			IBES		CORE		CE		CF	
			Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Pre-GFC	IBES	Model 1	0							
		Model 2	-57	0						
	CORE	Model 1	53	110	0					
		Model 2	-5	52	-58	0				
	CE	Model 1	-221	-164	-274	-216	0			
		Model 2	-222	-165	-275	-217	-1	0		
	CF	Model 1	50	107	-3	55	271	272	0	
		Model 2	-15	42	-68	-10	206	207	-65	0
GFC	IBES	Model 1	0							
		Model 2	-3	0						
	CORE	Model 1	-3	0	0					
		Model 2	-16	-13	-13	0				
	CE	Model 1	-34	-31	-31	-18	0			
		Model 2	-23	-20	-20	-7	11	0		
	CF	Model 1	-33	-30	-30	-17	1	-10	0	
		Model 2	-38	-35	-35	-22	-4	-15	-5	0
Post-GFC	IBES	Model 1	0							
		Model 2	8	0						
	CORE	Model 1	38	30	0					
		Model 2	45	37	7	0				
	CE	Model 1	62	54	24	17	0			
		Model 2	81	73	43	36	19	0		
	CF	Model 1	70	62	32	25	8	-11	0	
		Model 2	79	71	41	34	17	-2	9	0

The difference in BIC equals row model BIC less column model BIC. A negative figure indicates the row model is a better fit than the column model. The different grades of evidence corresponding to minimum BIC difference according to Raftery (1995) are:

Minimum BIC Difference of 0: Weak
Minimum BIC Difference of 2: Positive
Minimum BIC Difference of 6: Strong
Minimum BIC Difference of 10: Very Strong

3.3.2 Non-Financial Sector Sample

Table 3.7 presents the results for the non-financial sector. All models are statistically significant with an adjusted R^2 ranging between 0.5917 to 0.6152 in the pre-GFC period (Panel A), 0.5266 to 0.5661 in the GFC period (Panel B) and 0.5141 to 0.6142 in the post-GFC period (Panel C).[17] In Panel A, all non-GAAP earnings are not statistically significant. DIFF1 is moderately significant relative to IBES and DIFF2 is marginally significant relative to CORE.

Panel B shows the results for the GFC period. IBES is marginally significant. Generally, the pattern is similar to the pre-GFC period – DIFF1 and DIFF2 are statistically significant relative to IBES and CORE, respectively. The results indicate that GAAP has incremental value relevance over IBES and CORE earnings.

Post-GFC, all non-GAAP earnings measures are significant. Specifically, IBES is strongly significant but other non-GAAP earnings are only marginally significant. GAAP earnings are marginally to moderately significant relative to CORE, CE and CF. However, GAAP earnings do not appear to have incremental value relevance relative to IBES in contrast to the pre-GFC and GFC periods.

Generally, the results indicate a shift in the emphasis investors place on the different measures of earnings. While the results are mixed, there is evidence that GAAP earnings have incremental value relevance over non-GAAP earnings. Furthermore, there is also a discernible shift in investors' emphasis on non-GAAP earnings. Specifically, investors place greater emphasis on non-GAAP earnings in the post-GFC period relative to the pre-GFC period.

Interestingly, the coefficient for DIFF1 is negative and moderately significant in relation to IBES in the pre-GFC and GFC periods. This indicates lower values of DIFF1 are associated with higher Price. As lower values of DIFF1 indicate that GAAP earnings are generally closer to, or less than, non-GAAP earnings, investors appear to place greater emphasis on more conservative, i.e., lower value, measures of GAAP earnings in valuing the firm.

The results show that the relative performance of the models depends on the GAAP earnings measure used. In the pre-GFC period, the IBES model using DIFF1 (Model 1) performs better (ranked 1) than the IBES model using DIFF2 (Model 2, ranked 5) based on BIC. Interestingly, IBES is not significant in both these models but DIFF1 is moderately significant and negative.

[17] The highest mean VIF and Condition Index in this sample are 8.755 and 7.093, respectively, indicating that multicollinearity is not a significant problem.

Table 3.7: Ohlson Model: Non-Financial Sector Sample - Multivariate OLS Regression at Earnings Announcement Date

(Pre-GFC: Firm cluster = 1,850 and Time cluster = 25; GFC: Firm cluster = 1,804 and Time cluster = 9; Post-GFC: Firm cluster = 1,678 and Time cluster = 16)

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	1.841***	1.970***	2.043***	2.021***	2.087***	2.138***	2.078***	2.088***
	(5.98)	(7.33)	(8.21)	(8.06)	(8.10)	(7.89)	(8.11)	(8.02)
NonGAAPE	0.043	-0.361	-4.574	-4.399	-4.722	-3.400	-5.176	-3.984
	(0.01)	(-0.06)	(-1.05)	(-1.16)	(-1.07)	(-0.97)	(-1.20)	(-1.13)
DIFF	-12.161**	-6.478	0.494	5.834*	-3.634	0.634	-4.606	-3.317
	(-2.98)	(-1.71)	(0.10)	(2.03)	(-0.67)	(0.12)	(-1.04)	(-0.93)
Intercept	7.325**	5.998**	6.228*	6.265**	6.448*	6.271**	6.304*	5.776*
	(2.81)	(2.61)	(2.36)	(2.59)	(2.44)	(2.63)	(2.38)	(2.39)
Adj R^2	0.6152	0.5967	0.5983	0.6025	0.5963	0.5933	0.5969	0.5917
BIC	334978	336640	336497	336127	336671	336929	336615	337070
BIC Rank	1	5	3	2	6	7	4	8

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	1.365***	1.382***	1.530***	1.514***	1.492***	1.580***	1.516***	1.523***
	(7.10)	(6.88)	(7.29)	(7.51)	(7.14)	(6.94)	(7.42)	(7.56)
NonGAAPE	6.118*	6.198*	0.459	0.502	0.358	0.987	-0.031	0.437
	(2.01)	(1.99)	(0.21)	(0.23)	(0.16)	(0.57)	(-0.01)	(0.25)
DIFF	-3.576**	-1.643	-3.929	2.767***	-0.953	4.600	0.586	1.074
	(-2.80)	(-0.94)	(-1.27)	(3.76)	(-0.38)	(1.73)	(0.26)	(0.62)
Intercept	8.119***	7.802***	8.434***	8.477***	8.371***	8.581***	8.369***	8.289***
	(5.65)	(5.64)	(5.52)	(5.51)	(5.41)	(6.04)	(5.39)	(5.33)
Adj R^2	0.5661	0.5563	0.5273	0.5292	0.5266	0.5302	0.5281	0.5305
BIC	81933	82138	82713	82677	82728	82658	82690	82643
BIC Rank	1	2	7	5	8	4	6	3

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	1.002***	1.001***	1.248***	1.349***	1.260***	1.427***	1.251***	1.398***
	(4.98)	(4.99)	(5.12)	(6.15)	(4.82)	(5.37)	(5.11)	(6.78)
NonGAAPE	23.999***	23.995***	13.699*	10.347*	13.654*	8.563*	13.600*	8.738*
	(6.07)	(6.09)	(2.20)	(2.16)	(2.18)	(2.44)	(2.23)	(2.56)
DIFF	-0.107	-0.454	15.361**	1.466	14.238*	8.602*	13.668*	10.260
	(-0.02)	(-0.19)	(2.75)	(0.87)	(2.26)	(2.44)	(2.15)	(1.78)
Intercept	7.415**	7.383**	8.859***	9.261***	8.950***	9.503***	8.900***	9.314***
	(3.28)	(3.27)	(3.70)	(3.88)	(3.92)	(4.95)	(3.71)	(3.93)
Adj R^2	0.6141	0.6142	0.5400	0.5217	0.5399	0.5143	0.5398	0.5141
BIC	187573	187569	191167	191968	191175	192280	191179	192292
BIC Rank	2	1	3	6	4	7	5	8

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP.

This suggests GAAP earnings are value relevant and that investors place relatively greater emphasis on GAAP earnings, which are generally closer to, or less than, IBES. On the other hand, the CORE models using DIFF1 and DIFF2 (ranked 3 and 2, respectively) perform better than the corresponding CE and CF models over this same period. During the GFC, however, IBES outperforms all other models. The model performance of CORE deteriorates in this period. In the post-GFC period, IBES continues to outperform all other models. The ranking of CORE improves in this period. Also, CORE, CE and CF models, using DIFF1, generally perform better than the corresponding models using DIFF2. This result suggests that investors give relatively greater attention to recurring earnings. Note that DIFF1 is based on GAAP earnings from operations adjusted to exclude special items, i.e., earnings that more closely reflect recurring earnings.

Table 3.8 show the differences in BIC between models, which indicate how much better a model fit is relative to another model. The results generally indicate that model performance between the various earnings measures is strong to very strong.

Table 3.8: **Ohlson Model: Non-Financial Sector Sample - Difference in BIC between Models (Comparison of Model Performance using BIC)**

			IBES		CORE		CE		CF	
			Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Pre-GFC	**IBES**	Model 1	0							
		Model 2	1662	0						
	CORE	Model 1	1519	-143	0					
		Model 2	1149	-513	-370	0				
	CE	Model 1	1693	31	174	544	0			
		Model 2	1951	289	432	802	258	0		
	CF	Model 1	1637	-25	118	488	-56	-314	0	
		Model 2	2092	430	573	943	399	141	455	0
GFC	**IBES**	Model 1	0							
		Model 2	205	0						
	CORE	Model 1	780	575	0					
		Model 2	744	539	-36	0				
	CE	Model 1	795	590	15	51	0			
		Model 2	725	520	-55	-19	-70	0		
	CF	Model 1	757	552	-23	13	-38	32	0	
		Model 2	710	505	-70	-34	-85	-15	-47	0
Post-GFC	**IBES**	Model 1	0							
		Model 2	-4	0						
	CORE	Model 1	3594	3598	0					
		Model 2	4395	4399	801	0				
	CE	Model 1	3602	3606	8	-793	0			
		Model 2	4707	4711	1113	312	1105	0		
	CF	Model 1	3606	3610	12	-789	4	-1101	0	
		Model 2	4719	4723	1125	324	1117	12	1113	0

The difference in BIC equals row model BIC less column model BIC. A negative figure indicates the row model is a better fit than the column model. The different grades of evidence corresponding to minimum BIC difference according to Raftery (1995) are:

Minimum BIC Difference of 0: Weak
Minimum BIC Difference of 2: Positive
Minimum BIC Difference of 6: Strong
Minimum BIC Difference of 10: Very Strong

3.3.3 S&P 500 Sample

The results for firms in the S&P 500 index are presented in Table 3.9. All models are statistically significant with an adjusted R^2 ranging between 0.8672 to 0.8804 in the pre-GFC period (Panel A), 0.7467 to 0.7568 in the GFC period (Panel B) and 0.4367 to 0.5458 in the post-GFC period (Panel C). In the pre-GFC period, all non-GAAP earnings are marginally to moderately significant. GAAP earnings do not have incremental value relevance over IBES. However, GAAP earnings have incremental value relevance over CORE, CE and CF.

Table 3.9: Ohlson Model: S&P 500 Sample - Multivariate OLS Regression at Earnings Announcement Date

(Pre-GFC: Firm cluster = 416 and Time cluster = 25; GFC: Firm cluster = 419 and Time cluster = 9; Post-GFC: Firm cluster = 424 and Time cluster = 16)

Model 1: $P_{it} = \alpha_{it} + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{ijt} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_{it} + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{ijt} + \varepsilon_{it}$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	1.171***	1.167***	1.362***	1.480***	1.365***	1.590***	1.363***	1.541***
	(5.23)	(5.21)	(8.91)	(11.71)	(9.06)	(18.41)	(8.98)	(16.64)
NonGAAPE	13.616*	13.719**	8.605**	5.147*	8.907**	3.254*	8.582**	3.450*
	(2.56)	(2.58)	(2.72)	(1.97)	(2.77)	(2.27)	(2.86)	(2.36)
DIFF	-0.454	-0.618	7.469*	-1.208	11.229**	9.540**	8.585**	3.477*
	(-0.35)	(-1.33)	(2.23)	(-0.61)	(2.78)	(2.70)	(2.77)	(2.32)
Intercept	13.662***	13.622***	13.974***	14.641***	14.170***	15.609***	13.859***	14.358***
	(10.43)	(10.30)	(10.29)	(10.03)	(10.30)	(10.39)	(10.25)	(9.84)
Adj R^2	0.8803	0.8804	0.8730	0.8694	0.8741	0.8700	0.8728	0.8672
BIC	71062	71056	71532	71752	71463	71718	71533	71886
BIC Rank	2	1	4	7	3	6	5	8

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	1.174***	1.189***	1.205***	1.215***	1.198***	1.207***	1.245***	1.247***
	(12.88)	(13.77)	(13.47)	(13.32)	(17.10)	(17.50)	(17.55)	(15.79)
NonGAAPE	5.387***	5.182**	4.000***	3.677***	3.512***	3.354***	3.434***	3.135***
	(3.31)	(3.11)	(3.60)	(3.36)	(3.45)	(3.97)	(4.43)	(4.60)
DIFF	0.689	1.355	2.402	2.743	1.423	1.998	4.024***	3.698***
	(0.62)	(1.53)	(1.31)	(1.67)	(1.10)	(1.53)	(5.37)	(5.60)
Intercept	18.191***	18.324***	18.939***	19.302***	18.700***	19.110***	18.304***	19.001***
	(6.62)	(6.67)	(7.36)	(7.93)	(7.81)	(8.49)	(8.03)	(8.59)
Adj R^2	0.7514	0.7526	0.7467	0.7481	0.7483	0.7482	0.7558	0.7568
BIC	20331	20328	20379	20367	20365	20366	20299	20290
BIC Rank	4	3	8	7	5	6	2	1

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	0.576***	0.577**	0.698***	0.693***	0.679**	0.723***	0.769***	0.808***
	(3.33)	(3.22)	(4.38)	(4.80)	(3.09)	(3.80)	(3.62)	(5.59)
NonGAAPE	31.712***	31.997***	26.383***	26.345***	23.584**	20.299***	22.892**	20.076***
	(4.34)	(4.46)	(3.96)	(4.25)	(3.00)	(3.40)	(2.90)	(3.43)
DIFF	0.340	3.860	5.796	-0.848	19.045*	20.302***	23.367**	15.613*
	(0.09)	(1.67)	(0.79)	(-0.43)	(2.39)	(3.39)	(2.85)	(2.16)
Intercept	12.850***	12.977***	16.734***	17.105***	16.610***	18.934***	16.730***	19.261***
	(4.76)	(4.98)	(7.14)	(7.81)	(6.46)	(9.11)	(6.42)	(8.47)
Adj R^2	0.5425	0.5458	0.4980	0.4957	0.4774	0.4392	0.4739	0.4367
BIC	54427	54387	54940	54965	55163	55553	55199	55577
BIC Rank	2	1	3	4	5	7	6	8

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP.

During the GFC, all earnings measures are statistically significant. Also, the level of statistical significance is stronger in the GFC period relative to the pre-GFC period for the respective earnings measures. GAAP earnings do not have incremental value relevance except in relation to CF, where both DIFF1 and DIFF2 are strongly significant.

In the post-GFC period, however, the pattern reverts and is similar to the pre-GFC period, albeit with non-GAAP earnings having a stronger level of significance in the post-GFC period. This result indicates an increase in investors' focus on non-GAAP earnings after the GFC. DIFF1 and DIFF2 are statistically significant relative to CE and CF.

In terms of model performance, the BIC ranking shows that the IBES models deteriorate in performance between the pre-GFC and the GFC periods but improve between the GFC and the post-GFC periods. The IBES models generally outperform the CORE models across all periods. While CF is ranked relatively low in the pre- and post-GFC periods, it outperforms all other models in the GFC period. CORE improves in ranking in the post-GFC period.

Table 3.10 show the difference in BIC between models. The results generally indicate that model performance between the various earnings measures is very strong.

Table 3.10: Ohlson Model: S&P 500 Sample - Difference in BIC between Models (Comparison of Model Performance using BIC)

			IBES		CORE		CE		CF	
			Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Pre-GFC	IBES	Model 1	0							
		Model 2	-6	0						
	CORE	Model 1	470	476	0					
		Model 2	690	696	220	0				
	CE	Model 1	401	407	-69	-289	0			
		Model 2	656	662	186	-34	255	0		
	CF	Model 1	471	477	1	-219	70	-185	0	
		Model 2	824	830	354	134	423	168	353	0
GFC	IBES	Model 1	0							
		Model 2	-3	0						
	CORE	Model 1	48	51	0					
		Model 2	36	39	-12	0				
	CE	Model 1	34	37	-14	-2	0			
		Model 2	35	38	-13	-1	1	0		
	CF	Model 1	-32	-29	-80	-68	-66	-67	0	
		Model 2	-41	-38	-89	-77	-75	-76	-9	0
Post-GFC	IBES	Model 1	0							
		Model 2	-40	0						
	CORE	Model 1	513	553	0					
		Model 2	538	578	25	0				
	CE	Model 1	736	776	223	198	0			
		Model 2	1126	1166	613	588	390	0		
	CF	Model 1	772	812	259	234	36	-354	0	
		Model 2	1150	1190	637	612	414	24	378	0

The difference in BIC equals row model BIC less column model BIC. A negative figure indicates the row model is a better fit than the column model. The different grades of evidence corresponding to minimum BIC difference according to Raftery (1995) are:

Minimum BIC Difference of 0: Weak
Minimum BIC Difference of 2: Positive
Minimum BIC Difference of 6: Strong
Minimum BIC Difference of 10: Very Strong

3.3.4 Non-S&P 500 Sample

For firms not included in the S&P 500 index, Table 3.11 Panel A shows GAAP earnings (DIFF2) to be marginally significant only relative to CORE. Non-GAAP earnings are not statistically significant. Panel B shows similar results during the GFC, except that DIFF2 is strongly significant relative to CORE. In the post-GFC period, the results in Panel C show only IBES is strongly significant. GAAP earnings do not appear to have incremental value relevance.

Table 3.11: Ohlson Model: Non-S&P 500 Sample - Multivariate OLS Regression at Earnings Announcement Date

(Pre-GFC: Firm cluster = 1,771 and Time cluster = 25; GFC: Firm cluster = 1,665 and Time cluster = 9; Post-GFC: Firm cluster = 1,530 and Time cluster = 16)

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	1.638***	1.648***	1.633***	1.643***	1.713***	1.708***	1.726***	1.720***
	(5.73)	(5.58)	(5.70)	(5.80)	(5.75)	(5.46)	(5.79)	(5.61)
NonGAAPE	-2.507	-1.758	-4.811	-5.250	-5.113	-4.091	-5.184	-4.225
	(-0.53)	(-0.38)	(-1.02)	(-1.21)	(-1.05)	(-0.92)	(-1.07)	(-0.95)
DIFF	-8.964	-6.826	10.355	9.651*	-7.570	-6.017	-5.108	-4.104
	(-1.66)	(-1.43)	(1.73)	(2.09)	(-1.23)	(-0.95)	(-1.05)	(-0.94)
Intercept	8.001**	7.532**	7.504**	7.846**	7.429**	7.154**	7.720**	7.438**
	(2.99)	(2.79)	(2.71)	(2.92)	(2.75)	(2.63)	(2.73)	(2.63)
Adj R^2	0.5988	0.5887	0.5970	0.6011	0.5860	0.5800	0.5844	0.5795
BIC	310119	310897	310260	309933	311109	311558	311225	311598
BIC Rank	2	4	3	1	5	7	6	8

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	1.134***	1.149***	1.218***	1.232***	1.188***	1.194***	1.207***	1.211***
	(6.82)	(6.78)	(7.22)	(7.37)	(7.15)	(7.08)	(7.27)	(7.30)
NonGAAPE	2.030	2.130	-0.350	-0.448	-0.265	0.127	-0.693	-0.387
	(1.04)	(1.07)	(-0.24)	(-0.33)	(-0.18)	(0.09)	(-0.49)	(-0.29)
DIFF	-2.315	-1.423	2.145	3.394***	-2.686	-1.355	-0.133	0.192
	(-1.28)	(-0.80)	(1.51)	(3.96)	(-1.36)	(-0.40)	(-0.09)	(0.15)
Intercept	9.116***	8.860***	8.715***	8.806***	8.768***	8.667***	8.990***	8.917***
	(4.69)	(4.56)	(4.13)	(4.24)	(4.41)	(4.71)	(4.41)	(4.41)
Adj R^2	0.5616	0.5563	0.5469	0.5525	0.5485	0.5450	0.5472	0.5472
BIC	73661	73758	73929	73829	73901	73964	73916	73915
BIC Rank	1	2	7	3	4	8	6	5

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	0.970***	0.965***	1.049***	1.076***	1.041***	1.078***	1.045***	1.083***
	(6.33)	(6.40)	(5.56)	(5.77)	(5.44)	(5.56)	(5.52)	(5.67)
NonGAAPE	11.751***	11.970***	5.428	4.509	5.346	3.616	5.435	3.693
	(4.88)	(5.08)	(1.61)	(1.61)	(1.62)	(1.75)	(1.68)	(1.83)
DIFF	-1.456	-1.327	3.595	0.339	4.713	3.621	5.384	2.928
	(-0.56)	(-0.80)	(1.30)	(0.18)	(1.34)	(1.76)	(1.64)	(1.06)
Intercept	8.814***	8.763***	9.875***	9.870***	9.802***	9.882***	9.884***	9.994***
	(4.07)	(4.04)	(4.35)	(4.32)	(4.29)	(4.32)	(4.32)	(4.34)
Adj R^2	0.6380	0.6384	0.5980	0.5960	0.5977	0.5932	0.5973	0.5930
BIC	157582	157563	159449	159539	159465	159660	159470	159670
BIC Rank	2	1	3	6	4	7	5	8

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP.

These results show that investors are predominantly focused on book value of equity in the pre-GFC and GFC period. After the GFC, however, it appears that investors find IBES relatively more value relevant than in the two previous periods.

Using BIC to assess model performance, the results show that the IBES model improves in ranking from between the pre-GFC and GFC and continue to outperform all other models in post-GFC. In contrast, the ranking of CORE generally deteriorates from pre-GFC to post-GFC. All models are statistically significant with an adjusted R^2 ranging between 0.5795 to 0.6011 in the pre-GFC period (Panel A), 0.5450 to 0.5616 in the GFC period (Panel B) and 0.5930 to 0.6384 in the post-GFC period (Panel C).

Table 3.12 shows the difference in BIC between models, which indicate how much better a model fit is relative to another model. The results generally indicate that model performance between the various earnings measures is very strong.

Table 3.12: Ohlson Model: Non-S&P 500 Sample - Difference in BIC between Models
(Comparison of Model Performance using BIC)

			IBES		CORE		CE		CF	
			Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Pre-GFC	IBES	Model 1	0							
		Model 2	778	0						
	CORE	Model 1	141	-637	0					
		Model 2	-186	-964	-327	0				
	CE	Model 1	990	212	849	1176	0			
		Model 2	1439	661	1298	1625	449	0		
	CF	Model 1	1106	328	965	1292	116	-333	0	
		Model 2	1479	701	1338	1665	489	40	373	0
GFC	IBES	Model 1	0							
		Model 2	97	0						
	CORE	Model 1	268	171	0					
		Model 2	168	71	-100	0				
	CE	Model 1	240	143	-28	72	0			
		Model 2	303	206	35	135	63	0		
	CF	Model 1	255	158	-13	87	15	-48	0	
		Model 2	254	157	-14	86	14	-49	-1	0
Post-GFC	IBES	Model 1	0							
		Model 2	-19	0						
	CORE	Model 1	1867	1886	0					
		Model 2	1957	1976	90	0				
	CE	Model 1	1883	1902	16	-74	0			
		Model 2	2078	2097	211	121	195	0		
	CF	Model 1	1888	1907	21	-69	5	-190	0	
		Model 2	2088	2107	221	131	205	10	200	0

The difference in BIC equals row model BIC less column model BIC. A negative figure indicates the row model is a better fit than the column model. The different grades of evidence corresponding to minimum BIC difference according to Raftery (1995) are:

Minimum BIC Difference of 0: Weak
Minimum BIC Difference of 2: Positive
Minimum BIC Difference of 6: Strong
Minimum BIC Difference of 10: Very Strong

The choice of test sample and test period impact on the results of model performance. Generally, IBES is more strongly significant in the post-GFC periods in comparison to the pre-GFC and GFC periods for all samples. In the financial sector sample, the IBES model improves its performance in the post-GFC period relative to the pre-GFC period. IBES is not consistently more value relevant than other non-GAAP earnings across all periods. In the post-GFC period, however, the IBES models outperform all other models. Generally, the incremental value relevance of GAAP earnings is statistically significant in the CE and CF models of the financial sector samples. The results in the other samples are mixed.

3.4 DISCUSSION

My results show mixed evidence indicating a shift in investors' emphasis between the alternative measures of earnings pre-GFC and post-GFC.[18] Generally, the two different measures of GAAP earnings have a different impact on the results. Of the two GAAP earnings measures included in the models, GAAP1 more closely resembles the IBES and CORE earnings measures and should bias against finding significance.

My results do not show that investors find a particular non-GAAP earnings measure to be consistently more value relevant over GAAP or other non-GAAP earnings. Rather, investors' emphasis on non-GAAP earnings varies according to the time period and sample.

In the financial sample, all non-GAAP earnings are marginally significant in the pre-GFC period and GAAP earnings are incrementally value relevant in relation to IBES, CORE and CF. However, the best model based on BIC is CE, in which GAAP earnings do not have incremental value relevance. During the GFC, CE and CF models fill the top half of model ranking, suggesting that investors may be placing greater emphasis on cash-based figures. Notably, however, only CE is marginally significant. This change in emphasis is consistent with the argument that during the GFC, investors are concerned about the liquidity of financial firms.

Post-GFC, there is another change in emphasis as investors appear to move their focus away from cash-based figures. In this period, IBES and CORE models are ranked in the top half of all models. Noting that IBES and CORE are argued to better represent recurring earnings, it appears that investors are placing greater emphasis on the ability of financial firms to maintain recurring earnings. Additionally, GAAP earnings appear to have incremental value relevance only in relation to CE and CF, although DIFF1 is marginally significant in relation to CORE.

Generally, where DIFF1 and DIFF2 are significant, the coefficients are positive, except for DIFF1 in relation to CE (at $p = 0.05$) in the GFC period. The results indicate that

[18] The time cluster in the GFC period is small, which may lead to an over-rejection of the null when clustering on two dimensions (Gow *et al.*, 2010; Thompson, 2010). In such a case, Thompson (2010, p. 5) suggests that it is appropriate to cluster on the "less numerous dimension". Therefore, I re-estimated my models for the GFC period clustering only on time. As an additional test, I also re-estimated these models clustering on firms. The untabulated results for both one-way cluster, by time and by firm, are substantially similar for all models and across all samples to the results reported in this chapter.

investors positively value GAAP earnings in financial firms that are higher relative to non-GAAP earnings (i.e., DIFF1 or DIFF2 is positive).

The non-financial sample shows contrasting results. Non-GAAP earnings are not significant in the pre-GFC and GFC periods except for IBES, which is marginally significant in the GFC period. IBES Model 1, CORE Model 2 and CORE Model 1 are ranked 1, 2, and 3, respectively, in the pre-GFC period. In the GFC, both IBES models are ranked highest and the CF Model 2 ranked third. GAAP earnings have incremental value relevance in relation to IBES and CORE in both these periods. CORE, which is ranked in the upper half of the models in the pre-GFC period, dropped in ranking to the lower half in the GFC period. Post-GFC, IBES continues to rank highly while CF dropped in ranking to the lower half of models. The results suggest a shift in investors' focus to recurring earnings in the GFC and post-GFC periods. For non-financial firms, the focus on cash flows in the GFC is not as evident as with financial firms. An explanation is that the significance of cash flows to financial firms, in the GFC, is greater than its significance for non-financial firms. Nevertheless, post-GFC, it appears that investors generally place greater emphasis on recurring earnings rather than cash flows.

Interestingly, my results for the pre-GFC period do not support prior studies, such as Brown and Sivakumar (2003) - I find that GAAP earnings have incremental value relevance. Notably, DIFF1, in relation to IBES, is moderately significant and negative in the pre-GFC and GFC period. This indicates that investors find GAAP earnings, which are generally closer to, or less than, IBES incrementally value relevant. In comparison, GAAP earnings are not value relevant in relation to IBES in the post-GFC period, which is consistent with prior studies (Brown and Sivakumar, 2003). Also, the IBES models rank highest in this period. It appears that following the GFC, investors are returning their focus to IBES.

In the S&P 500 sample, the results shows a shift in investor emphasis from IBES in the pre-GFC period to CF in the GFC period and back to IBES in the post-GFC period. While all non-GAAP earnings are statistically significant in the pre-GFC period, GAAP earnings are incrementally value relevant only in relation to CORE, CE and CF. This finding is consistent with prior studies (Brown and Sivakumar, 2003; Albring *et al.*, 2010) that show IBES to be more value relevant than GAAP earnings.

My sample of S&P 500 firms in the pre-GFC period covers a similar period and sample firms as Albring *et al*. (2010). My results, however, do not support their findings that CORE is more value relevant than IBES. An explanation for this is that I use quarterly data while Albring *et al*. (2010) use annual data. Another explanation is I use a different statistical approach that corrects for both cross-sectional and time-series dependence. Albring *et al*. (2010) estimate their model using Huber-White robust standard errors. Gow *et al*. (2010) show through their simulation results that this approach does not adequately correct for both cross-sectional and time-series dependence.

In the GFC period for the S&P 500 sample, all non-GAAP earnings have generally increased in their level of significance. Notably, GAAP earnings is only incrementally value relevant in relation to CF. Further, CF models are ranked highest. These results suggests that investors are placing greater emphasis on cash flows, however, unlike the sample of financial firms, CE models do not perform as well and are ranked in the bottom half of the models. IBES models are ranked immediately after CF, suggesting that investors are placing a relatively stronger emphasis on recurring earnings in comparison to CORE and CE. In the post-GFC period, IBES remains highest ranked, however, this is followed in rank by CORE. It appears that in this period, investors place greater emphasis on recurring earnings. GAAP earnings are not incrementally value relevant in relation to both IBES and CORE but are incrementally value relevant in relation to CE and CF.

In the non-S&P 500 sample, only IBES in the post-GFC period and DIFF2, in relation to CORE in the pre-GFC and GFC periods, are statistically significant. There is limited evidence that GAAP earnings are value relevant in relation to small firms. My results are not directly comparable to prior studies as they do not separately test their models on small firms. In terms of model performance, IBES and CORE models generally rank highly across all periods.

Nevertheless, the results indicate that firm size has an impact on the results in the GFC and post-GFC periods. Specifically, in the financial sector and non-financial sector samples, only IBES is value relevant in both samples during the GFC, but all non-GAAP earnings are value relevant in the post-GFC period. In contrast, non-GAAP earnings are not value relevant both during and after the GFC in the non-S&P 500 sample except IBES, which is value relevant in the post-GFC period. The results from the S&P 500 samples, however, show non-GAAP earnings are value relevant both during and after the GFC.

Generally, my results show GAAP earnings to be value relevant. While the results of prior studies consistently show I/B/E/S earnings to be superior to GAAP earnings, my results only partially support these findings. I find that the GAAP earnings measure used, the period and the sample can impact on the findings.

Interestingly, the results consistently show an increase in the value relevance of non-GAAP earnings in the post-GFC period in comparison to the pre-GFC period. It appears that investors find BV to be highly value relevant and place relatively lower emphasis on non-GAAP earnings in the pre-GFC period. While investors continue to find BV highly value relevant after the GFC, the level of significance of non-GAAP earnings is also generally higher in the post-GFC period. The only exception to this is in the non S&P 500 sample, where only IBES is strongly significant but all other non-GAAP earnings are not significant.

Table 3.13 presents a summary of model rankings based on BIC for all sample and models. In contrast to prior studies, I find that IBES is not consistently ranked as the best performing model across all the periods of my study. There is a shift in emphasis from IBES to CF in the GFC period in the financial and S&P 500 samples. The difference between my findings and prior studies can be attributed to prior studies in this area using samples from pre-2002, (e.g., Brown and Sivakumar, 2003; Bhattacharya *et al*., 2003; Bradshaw and Sloan, 2002). Even so, my results are not consistent with Albring *et al*. (2010), who find S&P core earnings to be more value relevant than I/B/E/S earnings in their sample of large firms from 2002 to 2007. In my results for large firms, I find CORE to be generally ranked lower than IBES. In my pre-GFC results, covering nearly the same period as Albring *et al*. (2010), I also find GAAP earnings to have incremental value relevance relative to IBES but not CORE. While my sample includes S&P 500 firms, similar to Albring *et al*. (2010), I use quarterly data and my statistical model is different. This may explain the different results. Furthermore, in an additional test, I replicated Albring *et al*. (2010) using my S&P 500 sample for the pre-GFC period and the Huber-White correction to standard errors. I find IBES and CORE are statistically significant at 0.001 and 0.05, respectively, and GAAP is not statistically significant. However, I do not find CORE to be superior to IBES. My IBES result is consistent with Albring *et al*. (2010). Therefore, my different statistical approach partially explains the difference in our results.

Table 3.13: Summary of BIC Ranking by Model and Sample

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Financial								
- Pre-GFC	6	3	8	5	2	1	7	4
- GFC	8	6	6	5	2	4	3	1
- Post-GFC	1	2	3	4	5	8	6	7
Non-Financial								
- Pre-GFC	1	5	3	2	6	7	4	8
- GFC	1	2	7	5	8	4	6	3
- Post-GFC	2	1	3	6	4	7	5	8
S&P 500								
- Pre-GFC	2	1	4	7	3	6	5	8
- GFC	4	3	8	7	5	6	2	1
- Post-GFC	2	1	3	4	5	7	6	8
Non-S&P 500								
- Pre-GFC	2	4	3	1	5	7	6	8
- GFC	1	2	7	3	4	8	6	5
- Post-GFC	2	1	3	6	4	7	5	8

The results in this chapter are generally consistent with investors shifting their focus in the different periods of my study. There is strong evidence particularly indicating a shift in focus to non-GAAP earnings after the GFC. While there is some evidence that lower (more conservative) values of GAAP earnings have incremental value relevance, it is not conclusive. Nevertheless, the results show that when DIFF1 and DIFF2 are significant, the level of significance for non-GAAP earnings is generally equal to or less than the DIFF variables. I believe the GFC caused investors to be more aware and wary of non-mandated disclosures. An explanation for my findings may be that when investors find non-GAAP earnings informativeness to be low or uncertain, they place greater relative emphasis on GAAP earnings.

3.5 SUMMARY AND CONCLUSIONS

This chapter investigates the incremental value relevance of alternative measures of earnings to the US capital market. My study is driven by what I perceive to be gaps in the literature. Much of the literature in this area focuses on GAAP vs Street earnings, however, there has been little research comparing the value relevance of these measures with other alternative earnings measures collectively. Consequently, I focus on analyst-computed earnings (IBES), mandatory reported earnings (GAAP and operating cash flow), earnings computed by Standard & Poor's (CORE) and a measure commonly found in the financial press based on adjusting GAAP earnings (cash earnings).

The GFC offers an opportunity to examine its impact and the associated uncertainty and volatility it may have had on the emphasis investors place on alternative measures of earnings in valuation decisions. In relation to my research question, *RQ1*, there is evidence that the GFC has an impact on the value relevance of both GAAP and non-GAAP earnings.

Of interest are the results that show BV is generally more value relevant than earnings information. I find investors are focused predominantly on the book value of equity and this information is relatively more value relevant than earnings information across the samples in the pre-GFC period. Between the GFC and post-GFC periods, I find results consistent with investors shifting their emphasis between GAAP and non-GAAP earnings and also increasing their focus on non-GAAP earnings.

It is argued in the literature that I/B/E/S earnings are more value relevant than GAAP earnings because they better reflect non-transitory earnings, which is of greater interest to investors. My results only partly support this argument. When IBES models are highest ranked, GAAP earnings generally do not have incremental information content across all samples and periods, except in the non-financial sector sample in the pre-GFC and GFC periods. However, I find that the IBES model does not always rank higher than the other models I test, particularly in the GFC period. I find GAAP earnings have significant incremental value relevance relative to IBES that varies with the sample and test period.

One explanation for my results may be the time period covered in my sample and my sample size. Many prior studies use samples from fiscal years before 2005 or use a relatively small sample (Lougee and Marquardt, 2004; Batta and Muslu, 2010). Another explanation may be that the emphasis investors place on alternative earnings measures has changed over time. Note that my sample period covers the reporting regime after the introduction of SOX and through the global financial crisis. In periods of uncertainty and financial turmoil, investors may trade off relevance for reliability (Lobo and Zhou, 2006). GAAP earnings may be perceived to be more credible and reliable relative to I/B/E/S earnings.

Alternatively, other factors such as the information content of earnings, information asymmetry, earnings quality and conservatism may impact on the value relevance of these alternative earnings measures. I examine these factors in subsequent chapters.

My study contributes to the literature on the value relevance of alternative earnings metrics. I address more comprehensively the relative performance of six earning measures. My results should be of interest to standard setters and regulators on the usefulness of GAAP earnings relative to other measures of earnings. This may have implications on concerns regarding the relevance of GAAP in the capital markets. My results suggest that GAAP earnings continue to play a role in capital markets.

CHAPTER 4

CUMULATIVE ABNORMAL RETURNS MODEL RESULTS

4.1 INTRODUCTION

I examine the impact of the GFC on the informativeness of GAAP and non-GAAP earnings to address *RQ1a*. Consistent with Chapter 3, I use the same period windows to test for systematic differences in the information content of GAAP and non-GAAP earnings before, during and after the peak of the GFC. I use a Cumulative Abnormal Returns (CAR) model that regresses cumulative abnormal returns on the earnings surprise of non-GAAP earnings and the earnings surprise of GAAP earnings.

This chapter shows the analyses and results of my tests. I find mixed results, which only partly supports prior studies that show I/B/E/S and S&P Core earnings are consistently more informative than GAAP earnings (Albring *et al*., 2010; Bhattacharya *et al*., 2003; Brown and Sivakumar, 2003). I also find that S&P Core earnings generally rank below I/B/E/S earnings. My results show the GAAP informativeness is sensitive to sample and time periods. My results do not show that investors find GAAP earnings more informative during the GFC as expected. Rather, there is evidence that investors shift their focus away from GAAP during the GFC but return to GAAP after the GFC in the non-S&P 500 and non-financial sector samples. Furthermore, the significance of GAAP earnings informativeness is generally higher in the post-GFC period in comparison to the pre-GFC period.

4.2 UNIVARIATE RESULTS

To reiterate, the test variables for my CAR model, Equations 2.9 and 2.10 in Chapter 2, are:

ESNonGAAP: Non-GAAP earnings surprise for firm, defined as the difference between the actual non-GAAP earnings measure of interest and the median consensus security analysts' forecast of earnings scaled by the closing share price at *t-7*.

ESGAAP1: GAAP earnings surprise for firm, defined as the difference between the actual GAAP1 earnings and the median consensus security analysts' forecast of earnings scaled by the closing share price at *t-7*.

ESGAAP2: GAAP earnings surprise for firm, defined as the difference between the actual GAAP2 earnings and the median consensus security analysts' forecast of earnings scaled by the closing share price at *t-7*.

CAR: the cumulative market-adjusted abnormal returns for firm over a three-day window centred around the earnings announcement date.

Table 4.1 provides descriptive statistics of the variables for all firms in the sample. Unsurprisingly, mean CAR during the GFC is lower than in the pre-GFC period across all samples and the largest decrease in mean CAR between these two periods is in the financial sector sample. Notably, mean CAR during the GFC is negative for financial firms (Panel A) but positive for the other samples (Panels B, C and D). This is consistent with the negative impact of the GFC on the financial sector.

Table 4.1: Descriptive Statistics of Variables

Panel A: Financial Sector Sample (Pre-GFC: N = 4,253; Firms = 242 | GFC: N = 1,234; Firms = 239 | Post-GFC: N = 2,893; Firms = 222)

	ESIBES			ESCORE			ESCE			ESCF		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	0.000	-0.005	-0.001	-0.002	-0.018	-0.004	0.003	-0.019	0.001	-0.021	0.005	-0.018
sd	0.030	0.043	0.057	0.022	0.098	0.080	0.029	0.105	0.089	0.137	0.146	0.157
Minimum	-0.987	-0.536	-0.771	-0.702	-1.098	-1.225	-0.676	-1.088	-1.144	-1.596	-0.623	-1.008
25 pct	0.000	-0.004	-0.002	-0.002	-0.009	-0.004	0.000	-0.011	-0.001	-0.059	-0.025	-0.053
Median	0.001	0.000	0.000	0.000	-0.002	0.000	0.003	0.000	0.003	0.006	0.008	0.007
75 pct	0.002	0.002	0.003	0.002	0.001	0.003	0.008	0.006	0.010	0.027	0.029	0.026
Maximum	0.070	0.245	0.961	0.069	0.420	0.831	0.291	0.261	0.998	1.197	1.199	1.434

	ESGAAP1			ESGAAP2			CAR		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	0.000	-0.023	-0.004	-0.001	-0.023	-0.003	0.004	-0.004	0.000
sd	0.023	0.102	0.088	0.031	0.105	0.089	0.044	0.065	0.049
Minimum	-0.686	-1.089	-1.628	-0.987	-1.089	-1.324	-0.184	-0.183	-0.185
25 pct	-0.001	-0.013	-0.004	-0.001	-0.013	-0.004	-0.019	-0.041	-0.026
Median	0.001	-0.002	0.000	0.001	-0.002	0.000	0.003	-0.003	0.000
75 pct	0.003	0.001	0.004	0.004	0.001	0.005	0.027	0.034	0.026
Maximum	0.239	0.422	0.943	0.123	0.425	0.946	0.178	0.182	0.183

Panel B: Non-Financial Sector Sample (Pre-GFC: N = 35,216; Firms = 1,850 | GFC: N = 9,106; Firms = 1,804 | Post-GFC: N = 20,477; Firms = 1,678)

	ESIBES			ESCORE			ESCE			ESCF		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	0.000	-0.003	0.001	-0.006	-0.011	-0.004	0.008	-0.002	0.010	-0.008	-0.004	-0.013
sd	0.016	0.042	0.022	0.036	0.076	0.048	0.053	0.116	0.065	0.093	0.111	0.101
Minimum	-1.278	-1.297	-1.194	-1.543	-1.817	-1.737	-1.456	-2.107	-1.700	-1.280	-1.462	-1.520
25 pct	0.000	-0.001	0.000	-0.005	-0.006	-0.004	0.002	0.002	0.003	-0.028	-0.021	-0.035
Median	0.000	0.001	0.001	-0.001	-0.001	0.000	0.006	0.007	0.008	0.004	0.006	0.005
75 pct	0.002	0.002	0.003	0.001	0.001	0.002	0.013	0.014	0.017	0.019	0.023	0.023
Maximum	0.323	0.347	0.544	0.520	0.577	0.856	1.602	2.321	1.801	3.795	4.944	3.613

	ESGAAP1			ESGAAP2			CAR		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	-0.001	-0.006	-0.002	-0.004	-0.018	-0.006	0.004	0.003	0.001
sd	0.023	0.060	0.035	0.045	0.122	0.062	0.065	0.077	0.067
Minimum	-1.301	-1.694	-1.192	-1.501	-2.171	-1.750	-0.186	-0.186	-0.186
25 pct	-0.001	-0.003	-0.002	-0.002	-0.005	-0.004	-0.034	-0.049	-0.040
Median	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.003	0.000
75 pct	0.002	0.002	0.003	0.002	0.002	0.002	0.043	0.055	0.043
Maximum	0.811	0.446	1.009	0.578	0.577	0.866	0.186	0.186	0.186

Panel C: S&P 500 Sample (Pre-GFC: N = 7,908; Firms = 416 | GFC: N = 2,193; Firms = 419 | Post-GFC: N = 5,532; Firms = 424)

	ESIBES			ESCORE			ESCE			ESCF		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	0.001	-0.001	0.001	-0.004	-0.009	-0.002	0.006	-0.001	0.008	-0.015	-0.009	-0.018
sd	0.006	0.021	0.019	0.031	0.052	0.025	0.042	0.083	0.049	0.089	0.089	0.095
Minimum	-0.180	-0.257	-0.771	-1.446	-1.098	-0.908	-1.225	-1.551	-1.427	-1.280	-0.623	-0.675
25 pct	0.000	0.000	0.000	-0.003	-0.005	-0.003	0.002	0.002	0.003	-0.040	-0.022	-0.043
Median	0.000	0.000	0.001	-0.001	-0.001	0.000	0.005	0.005	0.007	0.004	0.006	0.005
75 pct	0.001	0.001	0.002	0.000	0.000	0.002	0.011	0.011	0.013	0.017	0.019	0.018
Maximum	0.080	0.181	0.295	0.175	0.220	0.383	0.373	0.264	0.438	1.158	0.704	1.434

	ESGAAP1			ESGAAP2			CAR		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	0.000	-0.005	-0.001	-0.003	-0.013	-0.004	0.005	0.002	0.000
sd	0.014	0.049	0.031	0.039	0.084	0.049	0.053	0.066	0.054
Minimum	-0.298	-1.089	-1.628	-1.426	-1.605	-1.524	-0.184	-0.185	-0.185
25 pct	0.000	-0.002	-0.001	-0.001	-0.004	-0.003	-0.026	-0.040	-0.032
Median	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.002	-0.001
75 pct	0.001	0.001	0.002	0.001	0.001	0.002	0.035	0.044	0.032
Maximum	0.571	0.222	0.187	0.362	0.222	0.392	0.185	0.185	0.186

Panel D: Non-S&P 500 Sample (Pre-GFC: N = 31,561; Firms = 1,771 | GFC: N = 8,147; Firms = 1,665 | Post-GFC: N = 17,838; Firms = 1,530)

	ESIBES			ESCORE			ESCE			ESCF		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	0.000	-0.004	0.001	-0.006	-0.013	-0.005	0.008	-0.005	0.009	-0.007	0.000	-0.012
sd	0.021	0.047	0.031	0.036	0.086	0.060	0.054	0.124	0.074	0.101	0.123	0.115
Minimum	-1.278	-1.297	-1.194	-1.543	-1.817	-1.737	-1.456	-2.107	-1.700	-1.596	-1.462	-1.520
25 pct	0.000	-0.001	-0.001	-0.005	-0.007	-0.005	0.002	0.001	0.002	-0.028	-0.022	-0.036
Median	0.001	0.000	0.001	-0.001	-0.001	0.000	0.006	0.006	0.008	0.004	0.006	0.005
75 pct	0.002	0.003	0.003	0.001	0.001	0.002	0.013	0.014	0.017	0.021	0.026	0.026
Maximum	0.323	0.347	0.961	0.520	0.577	0.856	1.602	0.735	1.313	1.672	1.435	1.642

	ESGAAP1			ESGAAP2			CAR		
	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC	Pre-GFC	GFC	Post-GFC
Mean	-0.001	-0.009	-0.003	-0.004	-0.021	-0.006	0.004	0.002	0.002
sd	0.025	0.071	0.049	0.045	0.130	0.071	0.066	0.078	0.069
Minimum	-1.301	-1.694	-1.192	-1.501	-2.171	-1.750	-0.186	-0.186	-0.186
25 pct	-0.001	-0.004	-0.003	-0.002	-0.006	-0.005	-0.034	-0.051	-0.040
Median	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.003	0.001
75 pct	0.002	0.002	0.003	0.002	0.002	0.003	0.043	0.055	0.043
Maximum	0.811	0.446	1.009	0.578	0.577	0.946	0.186	0.186	0.186

The variables are defined as follows: ESIBES = IBES minus Forecast and scaled by closing share price at t-7. ESCORE = CORE minus Forecast and scaled by closing share price at t-7. ESCE = IBES minus Forecast and scaled by closing share price at t-7. ESCF = IBES minus Forecast and scaled by closing share price at t-7. ESGAAP1 = GAAP1 minus Forecast and scaled by closing share price at t-7. ESGAAP2 = GAAP2 minus Forecast and scaled by closing share price at t-7. CAR = Cumulative market-adjusted abnormal returns over a three-day window centred around the earnings announcement date. Forecast = I/B/E/S median consensus forecasted earnings.

The means of ESGAAP1 and ESGAAP2 are generally lower than the means of other non-GAAP earnings surprise. In the pre-GFC period, the magnitude of mean earnings surprise is generally smaller relative to the GFC period across all samples except for ESCE and ESCF. Also, mean ESIBES, ESCORE, ESCE, ESGAAP1 and ESGAAP2 are negative in the GFC period for all samples, except for ESCF in the financial and non-S&P 500 samples. The results indicate that analysts may be optimistic in their forecasts during the GFC.

Furthermore, I/B/E/S actual earnings tend to be less surprising than other earnings measures, as evidenced by the generally lower absolute value of ESIBES. The degree of dispersion is also generally lower for ESIBES. Both of these appear to be the case across all samples. This is expected as both the actual and forecast measures of I/B/E/S earnings are measured on a consistent basis.

The correlations among the variables are shown in Table 4.2. All the earnings surprise variables are generally significantly correlated across all samples and across all time periods. Notable exceptions are ESCF and ESCORE, which are not significantly correlated in the financial sector sample in the post-GFC period, in the S&P 500 sample both during and after the GFC, and in the non-S&P 500 sample after the GFC. CAR is generally highly correlated with the earnings surprise variable in both the pre- and post-GFC periods in the financial, non-financial, and non-S&P 500 samples. During the GFC, however, CAR is only marginally correlated with the earnings surprise variables in the financial sample, but highly correlated with the earnings surprise variables in the non-financial and non-S&P 500 samples. In the S&P 500 sample, CAR is generally correlated with the earnings surprise variable during and after the GFC, but less so in the pre-GFC period.

Table 4.2: Pearson Correlations Among Variables

Panel A: Financial Sector Sample (Pre-GFC: N = 4,253; Firms = 242 | GFC: N = 1,234; Firms = 239 | Post-GFC: N = 2,893; Firms = 222)

Pre-GFC						
	ESIBES	*ESCORE*	*ESCE*	*ESCF*	*ESGAAP1*	*ESGAAP2*
ESCORE	0.495***					
ESCE	0.560***	0.801***				
ESCF	-0.111***	-0.057***	-0.066***			
ESGAAP1	0.578***	0.867***	0.735***	-0.057***		
ESGAAP2	0.627***	0.823***	0.923***	-0.071***	0.786***	
CAR	0.055***	0.086***	0.080***	0.009	0.095***	0.075***

GFC

	ESIBES	*ESCORE*	*ESCE*	*ESCF*	*ESGAAP1*	*ESGAAP2*
ESCORE	0.561***					
ESCE	0.609***	0.936***				
ESCF	-0.137***	-0.083**	-0.083**			
ESGAAP1	0.573***	0.955***	0.934***	-0.080**		
ESGAAP2	0.597***	0.946***	0.988***	-0.083**	0.946***	
CAR	0.056*	0.039	0.048	0.010	0.057*	0.057*

Post-GFC

	ESIBES	*ESCORE*	*ESCE*	*ESCF*	*ESGAAP1*	*ESGAAP2*
ESCORE	0.578***					
ESCE	0.605***	0.792***				
ESCF	-0.111***	-0.026	-0.033			
ESGAAP1	0.586***	0.860***	0.785***	-0.060**		
ESGAAP2	0.653***	0.891***	0.908***	-0.072***	0.867***	
CAR	0.130***	0.152***	0.135***	0.037*	0.161***	0.149***

Panel B: Non-Financial Sector Sample (Pre-GFC: N = 35,216; Firms = 1,850 | GFC: N = 9,106; Firms = 1,804 | Post-GFC: N = 20,477; Firms = 1,678)

Pre-GFC

	ESIBES	*ESCORE*	*ESCE*	*ESCF*	*ESGAAP1*	*ESGAAP2*
ESCORE	0.361***					
ESCE	0.279***	0.595***				
ESCF	0.011*	-0.078***	0.073***			
ESGAAP1	0.471***	0.630***	0.429***	-0.006		
ESGAAP2	0.359***	0.836***	0.775***	-0.052***	0.569***	
CAR	0.091***	0.049***	0.032***	0.002	0.062***	0.041***

GFC

	ESIBES	*ESCORE*	*ESCE*	*ESCF*	*ESGAAP1*	*ESGAAP2*
ESCORE	0.414***					
ESCE	0.394***	0.648***				
ESCF	-0.100***	-0.136***	-0.077***			
ESGAAP1	0.405***	0.742***	0.509***	-0.122***		
ESGAAP2	0.422***	0.730***	0.939***	-0.133***	0.570***	
CAR	0.054***	0.057***	0.045***	0.029**	0.040***	0.043***

Post-GFC

	ESIBES	*ESCORE*	*ESCE*	*ESCF*	*ESGAAP1*	*ESGAAP2*
ESCORE	0.485***					
ESCE	0.376***	0.703***				
ESCF	0.019**	0.018*	0.045***			
ESGAAP1	0.439***	0.803***	0.572***	0.032***		
ESGAAP2	0.405***	0.831***	0.892***	0.010	0.665***	
CAR	0.081***	0.059***	0.049***	0.028***	0.071***	0.050***

Panel C: S&P 500 Sample (Pre-GFC: N = 7,908; Firms = 416 | GFC: N = 2,193; Firms = 419 | Post-GFC: N = 5,532; Firms = 424)

Pre-GFC	*ESIBES*	*ESCORE*	*ESCE*	*ESCF*	*ESGAAP1*	*ESGAAP2*
ESCORE	0.328***					
ESCE	0.245***	0.638***				
ESCF	-0.014	-0.076***	-0.052***			
ESGAAP1	0.336***	0.387***	0.312***	-0.006		
ESGAAP2	0.284***	0.832***	0.832***	-0.082***	0.324***	
CAR	0.140***	0.032**	0.001	0.005	0.066***	0.001

GFC	*ESIBES*	*ESCORE*	*ESCE*	*ESCF*	*ESGAAP1*	*ESGAAP2*
ESCORE	0.626***					
ESCE	0.457***	0.720***				
ESCF	-0.136***	-0.041	-0.043*			
ESGAAP1	0.602***	0.883***	0.686***	-0.001		
ESGAAP2	0.485***	0.822***	0.902***	-0.071***	0.727***	
CAR	0.060**	0.061**	0.035	0.055**	0.048*	0.043*

Post-GFC	*ESIBES*	*ESCORE*	*ESCE*	*ESCF*	*ESGAAP1*	*ESGAAP2*
ESCORE	0.380***					
ESCE	0.301***	0.692***				
ESCF	-0.044**	-0.016	-0.047***			
ESGAAP1	0.532***	0.780***	0.538***	-0.036**		
ESGAAP2	0.335***	0.774***	0.919***	-0.059***	0.588***	
CAR	0.063***	0.055***	0.034*	0.049***	0.037**	0.037**

Panel D: Non-S&P 500 Sample (Pre-GFC: N = 31,561; Firms = 1,771 | GFC: N = 8,147; Firms = 1,665 | Post-GFC: N = 17,838; Firms = 1,530)

Pre-GFC	*ESIBES*	*ESCORE*	*ESCE*	*ESCF*	*ESGAAP1*	*ESGAAP2*
ESCORE	0.372***					
ESCE	0.300***	0.595***				
ESCF	-0.016**	-0.074***	0.079***			
ESGAAP1	0.490***	0.682***	0.460***	-0.014*		
ESGAAP2	0.391***	0.837***	0.770***	-0.047***	0.619***	
CAR	0.081***	0.054***	0.039***	0.002	0.064***	0.050***

GFC	*ESIBES*	*ESCORE*	*ESCE*	*ESCF*	*ESGAAP1*	*ESGAAP2*
ESCORE	0.428***					
ESCE	0.424***	0.684***				
ESCF	-0.104***	-0.136***	-0.083***			
ESGAAP1	0.433***	0.789***	0.561***	-0.128***		
ESGAAP2	0.439***	0.744***	0.951***	-0.132***	0.605***	
CAR	0.053***	0.052***	0.048***	0.020	0.041***	0.045***

Post-GFC

	ESIBES	*ESCORE*	*ESCE*	*ESCF*	*ESGAAP1*	*ESGAAP2*
ESCORE	0.514***					
ESCE	0.439***	0.724***				
ESCF	-0.016*	0.011	0.039***			
ESGAAP1	0.490***	0.818***	0.626***	0.013		
ESGAAP2	0.469***	0.849***	0.891***	0.001	0.713***	
CAR	0.087***	0.073***	0.061***	0.023**	0.087***	0.064***

The variables are defined as follows: ESIBES = IBES minus Forecast and scaled by closing share price at t-7. ESCORE = CORE minus Forecast and scaled by closing share price at t-7. ESCE = IBES minus Forecast and scaled by closing share price at t-7. ESCF = IBES minus Forecast and scaled by closing share price at t-7. ESGAAP1 = GAAP1 minus Forecast and scaled by closing share price at t-7. ESGAAP2 = GAAP2 minus Forecast and scaled by closing share price at t-7. CAR = Cumulative market-adjusted abnormal returns over a three-day window centred around the earnings announcement date. Forecast = I/B/E/S median consensus forecasted earnings.

4.3 MULTIVARIATE OLS REGRESSIONS

In Table 4.4 through to Table 4.14, the corresponding ESNonGAAP measures in Equation 2.9 (denoted as Model 3 in tables) and Equation 2.10 (denoted as Model 4 in tables) are ESIBES, ESCORE, ESCE and ESCF for the IBES, CORE, CE and CF models, respectively.[19] Recall that I evaluate model performance using BIC, where the lowest value of BIC for a model indicates the best fitting model. Also, Raftery (1995) provides an approximation to conventional *t* values using the differences in BIC values between models. In this section, as in Chapter 3, I present the absolute value of differences in BIC between the models in separate tables. These differences indicate the strength of the evidence for the rankings of model performance included in tables with the model estimates.

Table 4.3 presents a summary of the two highest ranked models for all samples and sub-periods that I test in this section. This summary shows that IBES models generally outperform other models across all samples.

[19] [19] Similar to Chapter 3, I test for multicollinearity using the variance inflation factor (VIF) and Condition Index due to the significant correlation between the independent variables in unreported correlations results. Across all samples and all periods, the highest mean VIF is 42.098 and the highest Condition Index is 13.261 in relation to CE Model 4 in the financial sample for the GFC period. While most of these mean values may be within tolerable limits, the results for CE should be interpreted with caution. All other mean VIF and Condition Index are under 12 and 7, respectively, suggesting that multicollinearity is not a significant problem.

Table 4.3: Summary of Two Highest Ranked Models for All Samples (Comparison of Model Performance using BIC)

Model 3: $CAR_i = \alpha_0 + \beta_1 ESNonGAAP_i + \beta_2 ESGAAP1_i + \varepsilon_i$

Model 4: $CAR_i = \alpha_0 + \beta_1 ESNonGAAP_i + \beta_2 ESGAAP2_i + \varepsilon_i$

	IBES		CORE		CE		CF	
	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4
Financial								
- Pre-GFC					1		1	
					(1)		(1)	
- GFC			1			1		
			(1)			(1)		
- Post-GFC	2						1	
	(4)						(1)	
Non-Financial								
- Pre-GFC	1		3					
	(14)		(153)					
- GFC		1	1	1				
		(1)	(1)	(1)				
- Post-GFC	1	2						
	(25)	(24)						
S&P 500								
- Pre-GFC	2	1						
	(130)	(1)						
- GFC							1	1
							(3)	(3)
- Post-GFC	2	1					4	2
	(1)	(1)						
Non-S&P 500								
- Pre-GFC	1	2						
	(12)	(86)						
- GFC	2	1						
	(3)	(2)						
- Post-GFC	1	2						
	(34)	(2)						
S&P 500 and Non-Financial								
- Pre-GFC	2	1						
	(127)	(11)						
- GFC							1	2
							(1)	(2)
- Post-GFC	1	2						
	(11)	(42)						

Models ranked 1 and 2 by their BIC are shown. The absolute difference in BIC values between the model and the next lower ranked model is shown in parentheses. The different grades of evidence corresponding to minimum BIC difference according to Raftery (1995) are:

- Minimum BIC Difference of 0: Weak
- Minimum BIC Difference of 2: Positive
- Minimum BIC Difference of 6: Strong
- Minimum BIC Difference of 10: Very Strong

The dependent variable, CAR, is the cumulative market-adjusted abnormal returns over a three-day window centred around the earnings announcement date. ESNonGAAP represents the following variables for IBES, CORE, CE and CF models: ESIBES = IBES minus Forecast. ESCORE = CORE minus Forecast. ESCE = IBES minus Forecast. ESCF = IBES minus Forecast. ESGAAP represents ESGAAP1 (Model 3) or ESGAAP2 (Model 4). ESGAAP1 = GAAP1 minus Forecast, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. ESGAAP2 = GAAP2 minus Forecast, where GAAP2 is income before extraordinary items per share reported under GAAP. Forecast = I/B/E/S median consensus forecasted earnings. All earnings minus forecast variables are scaled by share price at t-7.

When considered in conjunction with Table 3.3 in Chapter 3, I/B/E/S earnings appear to be relatively more important to investors than other non-GAAP earnings.

Table 4.4 shows the CAR model results for financial sector firms. All models are statistically significant in the pre- and post-GFC periods (Panels A and C). In the GFC period, all models are not statistically significant except for CE (Model 4).[20] ESIBES is not significant in all periods. ESCORE (Model 4) is marginally significant in both the pre-GFC and GFC periods. ESGAAP is marginally to moderately significant in the IBES, CORE and CF models in the pre-GFC period. In the GFC and post-GFC periods, ESGAAP is statistically significant in relation to IBES, CE and CF. These results show that GAAP earnings have incremental information content over some non-GAAP earnings. It also shows that while GAAP earnings do not appear to be as informative during the GFC in relation to IBES and CF, they are informative before and after the GFC, indicating a change in investor's emphasis over the three sub-periods. CF Model 3 is ranked highest in both the pre- and post-GFC periods.

The results do not indicate that cash flows have information content in comparison to GAAP earnings. On the other hand, both ESGAAP1 and ESGAAP2 are moderately significant indicating that GAAP earnings have incremental information content over cash flows in both the pre- and post-GFC periods.

In terms of model performance, the BIC ranking in Table 4.4 shows that, for each non-GAAP earnings model, ESGAAP1 performs better than ESGAAP2 in both the pre- and post-GFC periods. This result suggests that investors generally find GAAP1 to be more informative than GAAP2. This is consistent with the argument that because GAAP1 more closely resembles IBES and CORE, it should better reflect recurring earnings than GAAP2.

[20] In untabulated results, I exclude financial sector firms that are also in the S&P 500 index. I find substantially similar results.

Table 4.4: CAR Model: Financial Sector Sample - Multivariate OLS Regression 3-Day Window Centred around Earnings Announcement Date

(Pre-GFC: Firm cluster = 242 and Time cluster = 25; GFC: Firm cluster = 239 and Time cluster = 9: Post-GFC: Firm cluster = 222 and Time cluster = 16)

Model 3: $CAR_i = \alpha_0 + \beta_1 ESNonGAAP_i + \beta_2 ESGAAP1_i + \varepsilon_i$

Model 4: $CAR_i = \alpha_0 + \beta_1 ESNonGAAP_i + \beta_2 ESGAAP2_i + \varepsilon_i$

	IBES		CORE		CE		CF	
	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4
Panel A: Pre-GFC								
ESNonGAAP	0.002	0.024	0.027	0.142*	0.032	0.106	0.005	0.005
	(0.05)	(0.45)	(0.59)	(2.21)	(0.82)	(1.66)	(0.77)	(0.77)
ESGAAP	0.178**	0.092	0.156*	0.018	0.148	0.007	0.180**	0.106**
	(3.29)	(1.96)	(1.96)	(0.39)	(1.91)	(0.11)	(3.28)	(2.83)
Intercept	0.004***	0.004***	0.004***	0.004***	0.004***	0.004**	0.004***	0.004***
	(3.66)	(3.64)	(3.67)	(3.80)	(3.55)	(3.19)	(3.64)	(3.61)
Adj R^2	0.0085	0.0052	0.0086	0.0069	0.0087	0.0059	0.0087	0.0053
Model *F*	6.867**	4.158*	6.014**	5.570**	6.487**	5.851**	7.005***	4.747**
BIC	-14528	-14514	-14528	-14521	-14529	-14517	-14529	-14514
BIC Rank	3	7	3	5	1	6	1	7
Panel B: GFC								
ESNonGAAP	0.026	0.026	-0.091	-0.072*	-0.018	-0.153*	0.006	0.006
	(0.79)	(0.77)	(-1.63)	(-2.13)	(-0.48)	(-2.31)	(0.49)	(0.47)
ESGAAP	0.020	0.018	0.119	0.092*	0.049	0.180**	0.031	0.028
	(0.79)	(0.79)	(1.76)	(2.21)	(0.95)	(2.86)	(1.54)	(1.66)
Intercept	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.003	-0.003
	(-1.09)	(-1.09)	(-1.13)	(-1.14)	(-1.17)	(-0.97)	(-1.22)	(-1.22)
Adj R^2	0.0025	0.0024	0.0044	0.0037	0.0018	0.0040	0.0019	0.0018
Model *F*	1.070	1.112	2.178	1.138	1.003	3.707*	1.102	1.089
BIC	-3230	-3230	-3232	-3231	-3229	-3232	-3229	-3229
BIC Rank	4	4	1	3	6	1	6	6
Panel C: Post-GFC								
ESNonGAAP	0.043	0.045	0.033	0.057	0.012	-0.002	0.015	0.015
	(1.46)	(1.49)	(0.69)	(0.92)	(0.56)	(-0.08)	(1.68)	(1.74)
ESGAAP	0.080*	0.066*	0.072	0.039	0.089*	0.090	0.102**	0.090**
	(2.32)	(2.46)	(1.16)	(0.62)	(1.99)	(1.94)	(2.96)	(3.21)
Intercept	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.38)	(0.31)	(0.37)	(0.33)	(0.32)	(0.28)	(0.47)	(0.38)
Adj R^2	0.0271	0.0234	0.0260	0.0234	0.0254	0.0216	0.0274	0.0239
Model *F*	7.824***	8.737***	8.610***	9.150***	8.883***	9.295***	11.355***	13.203***
BIC	-9335	-9324	-9331	-9324	-9330	-9318	-9336	-9325
BIC Rank	2	6	3	6	4	8	1	5

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, *CAR*, is the cumulative market-adjusted abnormal returns over a three-day window centred around the earnings announcement date. ESNonGAAP represents the following variables for IBES, CORE, CE and CF models: ESIBES = IBES minus Forecast. ESCORE = CORE minus Forecast. ESCE = IBES minus Forecast. ESCF = IBES minus Forecast. ESGAAP represents ESGAAP1 (Model 3) or ESGAAP2 (Model 4). ESGAAP1 = GAAP1 minus Forecast, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. ESGAAP2 = GAAP2 minus Forecast, where GAAP2 is income before extraordinary items per share reported under GAAP. Forecast = I/B/E/S median consensus forecasted earnings. All earnings minus forecast variables are scaled by share price at *t*-7.

In Table 4.5 the difference in model performance and the likelihood that one model is better than another model is generally strong to very strong in the pre- and post-GFC periods. In the GFC period, the evidence is only weak to positive that a given model is a better fit than the next ranked model.

Table 4.5: CAR Model: Financial Sector Sample - Difference in BIC between Models (Comparison of Model Performance using BIC)

			IBES		CORE		CE		CF	
			Model 3	Model 4	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4
Pre-GFC	IBES	Model 3	0							
		Model 4	14	0						
	CORE	Model 3	0	-14	0					
		Model 4	7	-7	7	0				
	CE	Model 3	-1	-15	-1	-8	0			
		Model 4	11	-3	11	4	12	0		
	CF	Model 3	-1	-15	-1	-8	0	-12	0	
		Model 4	14	0	14	7	15	3	15	0
GFC	IBES	Model 3	0							
		Model 4	0	0						
	CORE	Model 3	-2	-2	0					
		Model 4	-1	-1	1	0				
	CE	Model 3	1	1	3	2	0			
		Model 4	-2	-2	0	-1	-3	0		
	CF	Model 3	1	1	3	2	0	3	0	
		Model 4	1	1	3	2	0	3	0	0
Post-GFC	IBES	Model 3	0							
		Model 4	11	0						
	CORE	Model 3	4	-7	0					
		Model 4	11	0	7	0				
	CE	Model 3	5	-6	1	-6	0			
		Model 4	17	6	13	6	12	0		
	CF	Model 3	-1	-12	-5	-12	-6	-18	0	
		Model 4	10	-1	6	-1	5	-7	11	0

The difference in BIC equals row model BIC less column model BIC. A negative figure indicates the row model is a better fit than the column model. The different grades of evidence corresponding to minimum BIC difference according to Raftery (1995) are:

Minimum BIC Difference of 0: Weak
Minimum BIC Difference of 2: Positive
Minimum BIC Difference of 6: Strong
Minimum BIC Difference of 10: Very Strong

The results in Table 4.6 for non-financial firms are also mixed depending on the GAAP earnings measure used. All models are statistically significant across all time periods. Table 4.6 shows that ESGAAP1 is significant across all non-GAAP earnings models in both the pre- and post-GFC periods. IBES and CORE models are generally statistically significant across all periods.

Table 4.6: CAR Model: Non-Financial Sector Sample - Multivariate OLS Regression
3-Day Window Centred around Earnings Announcement Date
(Pre-GFC: Firm cluster = 1,850 and Time cluster = 25; GFC: Firm cluster = 1,804 and Time cluster = 9; Post-GFC: Firm cluster = 1,678 and Time cluster = 16)

Model 3: $CAR_i = \alpha_0 + \beta_1 ESNonGAAP_i + \beta_2 ESGAAP1_i + \varepsilon_i$

Model 4: $CAR_i = \alpha_0 + \beta_1 ESNonGAAP_i + \beta_2 ESGAAP2_i + \varepsilon_i$

	IBES		CORE		CE		CF	
	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4
Panel A: Pre-GFC								
ESNonGAAP	0.318***	0.351***	0.027	0.079**	0.008	0.001	0.002	0.003
	(3.49)	(3.77)	(1.55)	(3.02)	(0.83)	(0.09)	(0.27)	(0.50)
ESGAAP	0.065*	0.013	0.137***	0.000	0.157***	0.053**	0.165***	0.054**
	(2.03)	(1.39)	(3.69)	(0.02)	(4.02)	(2.63)	(3.94)	(3.06)
Intercept	0.004***	0.004***	0.004***	0.005***	0.004***	0.004***	0.004***	0.004***
	(5.76)	(5.68)	(5.86)	(6.10)	(5.84)	(5.76)	(5.83)	(5.81)
Adj R^2	0.0086	0.0082	0.0039	0.0023	0.0038	0.0016	0.0038	0.0016
Model *F*	12.797***	13.127***	28.757***	17.037***	26.889***	15.733***	25.296***	16.097***
BIC	-92379	-92365	-92212	-92156	-92208	-92131	-92207	-92131
BIC Rank	1	2	3	6	4	7	5	7
Panel B: GFC								
ESNonGAAP	0.063**	0.061*	0.061***	0.055*	0.019*	0.020	0.023	0.023
	(2.63)	(2.12)	(4.57)	(2.28)	(2.09)	(1.04)	(1.85)	(1.91)
ESGAAP	0.026	0.014	-0.008	0.001	0.028	0.006	0.053*	0.027**
	(1.34)	(1.61)	(-0.43)	(0.12)	(1.12)	(0.30)	(2.22)	(3.08)
Intercept	0.003**	0.003**	0.003**	0.003**	0.003*	0.003*	0.003*	0.003*
	(2.70)	(3.01)	(2.91)	(2.98)	(2.47)	(2.53)	(2.04)	(2.42)
Adj R^2	0.0030	0.0032	0.0031	0.0031	0.0022	0.0018	0.0025	0.0028
Model *F*	9.905***	10.612***	8.423***	8.149***	5.622**	5.368**	7.054**	8.293***
BIC	-20805	-20806	-20806	-20806	-20797	-20794	-20800	-20803
BIC Rank	4	1	1	1	7	8	6	5
Panel C: Post-GFC								
ESNonGAAP	0.137***	0.161***	0.008	0.072***	0.011	0.018	0.016	0.017
	(3.50)	(4.23)	(0.76)	(3.98)	(1.32)	(0.79)	(1.30)	(1.41)
ESGAAP	0.074***	0.021**	0.110***	0.003	0.108***	0.033	0.118***	0.050***
	(4.53)	(2.76)	(4.64)	(0.21)	(4.44)	(1.23)	(5.94)	(5.16)
Intercept	0.002	0.002	0.002*	0.002*	0.002	0.002	0.002*	0.002*
	(1.86)	(1.83)	(1.99)	(2.07)	(1.79)	(1.66)	(2.03)	(2.10)
Adj R^2	0.0080	0.0068	0.0050	0.0034	0.0050	0.0025	0.0056	0.0032
Model *F*	22.421***	15.530***	18.400***	16.821***	18.864***	12.220***	20.636***	16.71***
BIC	-52452	-52427	-52390	-52358	-52392	-52339	-52403	-52353
BIC Rank	1	2	5	6	4	8	3	7

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, *CAR*, is the cumulative market-adjusted abnormal returns over a three-day window centred around the earnings announcement date. ESNonGAAP represents the following variables for IBES, CORE, CE and CF models: ESIBES = IBES minus Forecast. ESCORE = CORE minus Forecast. ESCE = IBES minus Forecast. ESCF = IBES minus Forecast. ESGAAP represents ESGAAP1 (Model 3) or ESGAAP2 (Model 4). ESGAAP1 = GAAP1 minus Forecast, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. ESGAAP2 = GAAP2 minus Forecast, where GAAP2 is income before extraordinary items per share reported under GAAP. Forecast = I/B/E/S median consensus forecasted earnings. All earnings minus forecast variables are scaled by share price at *t*-7.

ESCE is only marginally significant in relation to Model 3 in the GFC period but ESCF is not significant in any period. Similar to financial firms, in both the pre- and post-GFC periods, the models using ESGAAP1 perform better than corresponding models with ESGAAP2 when ranked according to BIC. Also, IBES is ranked highest in both these periods.

These results show that GAAP earnings have incremental information content over non-GAAP earnings in both the pre- and post-GFC periods. In the GFC period, however, the results show GAAP earnings have incremental information content only in relation to CF. It appears that investors do not find GAAP earnings to be informative during the GFC. Also, there appears to be a shift in investor focus due to the GFC. In terms of model performance, the BIC ranking indicates that IBES generally outperforms other models across the three periods.

Table 4.7 shows the difference in BIC between models for each time period. In the pre- and post-GFC periods, the evidence is very strong that IBES is a better fit than all other models. During the GFC, the results generally show positive to strong evidence that IBES models are a better fit compared to the other models.

Table 4.7: CAR Model: Non-Financial Sector Sample - Difference in BIC between Models (Comparison of Model Performance using BIC)

			IBES		CORE		CE		CF	
			Model 3	Model 4	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4
Pre-GFC	IBES	Model 3	0							
		Model 4	14	0						
	CORE	Model 3	167	153	0					
		Model 4	223	209	56	0				
	CE	Model 3	171	157	4	-52	0			
		Model 4	248	234	81	25	77	0		
	CF	Model 3	172	158	5	-51	1	-76	0	
		Model 4	248	234	81	25	77	0	76	0
GFC	IBES	Model 3	0							
		Model 4	-1	0						
	CORE	Model 3	-1	0	0					
		Model 4	-1	0	0	0				
	CE	Model 3	8	9	9	9	0			
		Model 4	11	12	12	12	3	0		
	CF	Model 3	5	6	6	6	-3	-6	0	
		Model 4	2	3	3	3	-6	-9	-3	0
Post-GFC	IBES	Model 3	0							
		Model 4	25	0						
	CORE	Model 3	62	37	0					
		Model 4	94	69	32	0				
	CE	Model 3	60	35	-2	-34	0			
		Model 4	113	88	51	19	53	0		
	CF	Model 3	49	24	-13	-45	-11	-64	0	
		Model 4	99	74	37	5	39	-14	50	0

The difference in BIC equals row model BIC less column model BIC. A negative figure indicates the row model is a better fit than the column model. The different grades of evidence corresponding to minimum BIC difference according to Raftery (1995) are:

Minimum BIC Difference of 0: Weak
Minimum BIC Difference of 2: Positive
Minimum BIC Difference of 6: Strong
Minimum BIC Difference of 10: Very Strong

Table 4.8 reports the results for firms in the S&P 500 index. In the pre-GFC period, two of the eight models tested are not statistically significant, which are CE Model 4 and CF Model 4. Of the non-GAAP earnings measures, only ESIBES (Models 3 and 4) and ESCORE (Mode 6) are strongly significant. The results for the pre-GFC period generally show that GAAP earnings have incremental information content. ESGAAP2 also has a stronger level of statistical significance in comparison to ESGAAP1 in the IBES and CORE models. The coefficients for ESGAAP2, however, are negative indicating that investors view the earnings surprise as bad news. In the CE and CF models, ESGAAP1 is marginally significant but ESGAAP2 is not significant.

I find weak results in the GFC period. ESCORE and ESCF are marginally significant. In these models, only ESGAAP2 is marginally significant. The results do not indicate that GAAP earnings have incremental information content generally. Post-GFC, only the CF models are statistically significant. GAAP earnings, however, are not statistically significant and are not informative.

In terms of model performance, six of the eight models are statistically significant in the pre-GFC period, however, only three and two models are statistically significant in the GFC and post-GFC periods, respectively. Therefore, the BIC ranking of relative model fit should be interpreted with caution for the GFC and post-GFC periods. In the pre-GFC period, IBES is most informative and only ESGAAP2 has incremental information content relative to ESIBES.

Table 4.8: CAR Model: S&P 500 Sample - Multivariate OLS Regression 3-Day Window Centred Around Earnings Announcement Date

(Pre-GFC: Firm cluster = 416 and Time cluster = 25; GFC: Firm cluster = 419 and Time cluster = 9; Post-GFC: Firm cluster = 424 and Time cluster = 16)

Model 3: $CAR_i = \alpha_0 + \beta_1 ESNonGAAP_i + \beta_2 ESGAAP1_i + \varepsilon_i$

Model 4: $CAR_i = \alpha_0 + \beta_1 ESNonGAAP_i + \beta_2 ESGAAP2_i + \varepsilon_i$

	IBES		CORE		CE		CF	
	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4
Panel A: Pre-GFC								
ESNonGAAP	1.117***	1.279***	0.011	0.145***	-0.026	-0.001	0.003	0.003
	(5.66)	(6.18)	(0.38)	(4.30)	(-1.16)	(-0.02)	(0.30)	(0.28)
ESGAAP	0.072	-0.052***	0.214*	-0.102***	0.246*	0.002	0.223*	0.002
	(.)	(-3.84)	(2.06)	(-4.81)	(2.34)	(0.06)	(2.55)	(0.09)
Intercept	0.004***	0.004***	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***
	(4.12)	(3.82)	(4.24)	(4.40)	(4.40)	(4.00)	(4.41)	(4.34)
Adj R^2	0.0198	0.0210	0.0042	0.0028	0.0046	-0.0003	0.0042	-0.0002
Model F	24.179***	24.289***	3.836*	8.026***	3.119*	0.002	3.189*	0.133
BIC	-24143	-24144	-24009	-23999	-24013	-23974	-24009	-23975
BIC Rank	2	1	4	6	3	8	4	7
Panel B: GFC								
ESNonGAAP	0.076	0.079	0.080*	0.073	0.003	-0.013	0.037*	0.040*
	(1.76)	(1.46)	(2.32)	(1.34)	(0.10)	(-0.92)	(2.09)	(2.17)
ESGAAP	0.019	0.011	-0.030	-0.014	0.047	0.039	0.050	0.029*
	(0.89)	(0.62)	(-0.54)	(-0.37)	(0.99)	(1.80)	(1.66)	(1.98)
Intercept	0.002	0.002*	0.002*	0.002*	0.002	0.002*	0.002	0.003*
	(1.65)	(1.98)	(2.07)	(1.96)	(1.52)	(2.07)	(1.80)	(2.32)
Adj R^2	0.0029	0.0029	0.0030	0.0030	0.0014	0.0010	0.0044	0.0043
Model F	2.464	2.581	3.024*	2.538	1.695	1.492	4.698**	4.631**
BIC	-5665	-5665	-5665	-5665	-5662	-5661	-5668	-5668
BIC Rank	3	3	3	3	7	8	1	1
Panel C: Post-GFC								
ESNonGAAP	0.197*	0.185	0.139**	0.136	0.025	-0.000	0.029*	0.029*
	(2.20)	(1.67)	(2.89)	(1.31)	(0.71)	(-0.00)	(2.29)	(2.18)
ESGAAP	0.008	0.023	-0.030	-0.018	0.048	0.047	0.072	0.051
	(0.09)	(0.61)	(-0.36)	(-0.39)	(0.49)	(0.48)	(0.86)	(1.35)
Intercept	-0.000	-0.000	0.000	0.000	-0.000	0.000	0.000	0.000
	(-0.22)	(-0.15)	(0.12)	(0.08)	(-0.23)	(0.02)	(0.28)	(0.38)
Adj R^2	0.0036	0.0039	0.0028	0.0028	0.0013	0.0010	0.0036	0.0037
Model F	1.784	1.056	2.503	1.750	0.902	0.976	6.732**	7.378***
BIC	-16532	-16533	-16527	-16527	-16518	-16517	-16531	-16532
BIC Rank	2	1	5	5	7	8	4	2

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, *CAR*, is the cumulative market-adjusted abnormal returns over a three-day window centred around the earnings announcement date. ESNonGAAP represents the following variables for IBES, CORE, CE and CF models: ESIBES = IBES minus Forecast. ESCORE = CORE minus Forecast. ESCE = IBES minus Forecast. ESCF = IBES minus Forecast. ESGAAP represents ESGAAP1 (Model 3) or ESGAAP2 (Model 4). ESGAAP1 = GAAP1 minus Forecast, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. ESGAAP2 = GAAP2 minus Forecast, where GAAP2 is income before extraordinary items per share reported under GAAP. Forecast = I/B/E/S median consensus forecasted earnings. All earnings minus forecast variables are scaled by share price at *t*-7.

Table 4.9 shows that, pre-GFC, there is very strong evidence that the data favour IBES models over all other models. The level of evidence is, however, weaker in the GFC period. While there is still very strong evidence that IBES models perform better than CE and CF models in the post-GFC period, the evidence is weak in respect to model performance between IBES and CORE.

Table 4.9: CAR Model: S&P 500 Sample - Difference in BIC between Models (Comparison of Model Performance using BIC)

			IBES		**CORE**		**CE**		**CF**	
			Model 3	Model 4	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4
Pre-GFC	**IBES**	Model 3	0							
		Model 4	-1	0						
	CORE	Model 3	134	135	0					
		Model 4	144	145	10	0				
	CE	Model 3	130	131	-4	-14	0			
		Model 4	169	170	35	25	39	0		
	CF	Model 3	134	135	0	-10	4	-35	0	
		Model 4	168	169	34	24	38	-1	34	0
GFC	**IBES**	Model 3	0							
		Model 4	0	0						
	CORE	Model 3	0	0	0					
		Model 4	0	0	0	0				
	CE	Model 3	3	3	3	3	0			
		Model 4	4	4	4	4	1	0		
	CF	Model 3	-3	-3	-3	-3	-6	-7	0	
		Model 4	-3	-3	-3	-3	-6	-7	0	0
Post-GFC	**IBES**	Model 3	0							
		Model 4	-1	0						
	CORE	Model 3	5	6	0					
		Model 4	5	6	0	0				
	CE	Model 3	14	15	9	9	0			
		Model 4	15	16	10	10	1	0		
	CF	Model 3	1	2	-4	-4	-13	-14	0	
		Model 4	0	1	-5	-5	-14	-15	-1	0

The difference in BIC equals row model BIC less column model BIC. A negative figure indicates the row model is a better fit than the column model. The different grades of evidence corresponding to minimum BIC difference according to Raftery (1995) are:

Minimum BIC Difference of 0: Weak
Minimum BIC Difference of 2: Positive
Minimum BIC Difference of 6: Strong
Minimum BIC Difference of 10: Very Strong

Given my results in the financial sector sample and in this S&P 500 sample, I re-estimate and test my models on a sub-sample of firms that are in the S&P 500 index after excluding financial sector firms. The results for the pre-GFC period, reported in Table 4.10, are substantially similar. The results for the GFC period are also generally similar except for CORE Model 4, which is statistically significant in this sub-sample. I find that financial sector firms in the S&P 500 index have an impact on my results primarily in the post-GFC period.

In the post-GFC period, all models except CE (Model 4) are statistically significant. ESIBES (Models 3 and 4) and ESCORE (Model 4) are statistically significant. However, ESCF is not significant in this sub-sample. While ESGAAP1 and ESGAAP2 are not statistically significant in any model in the financial sector sample, ESGAAP1 is statistically significant across all models in this sub-sample. The results indicate that GAAP earnings have incremental information content in respect to large non-financial firms.

Table 4.10: CAR Model: S&P 500 Sample Excluding Financial Sector Firms - Multivariate OLS Regression
3-Day Window Centred Around Earnings Announcement Date
(Pre-GFC: Firm cluster = 364 and Time cluster = 25; GFC: Firm cluster = 363 and Time cluster = 9; Post-GFC: Firm cluster = 371 and Time cluster = 16

Model 3: $CAR_i = \alpha_0 + \beta_1 ESNonGAAP_i + \beta_2 ESGAAP1_i + \varepsilon_i$

Model 4: $CAR_i = \alpha_0 + \beta_1 ESNonGAAP_i + \beta_2 ESGAAP2_i + \varepsilon_i$

	IBES		CORE		CE		CF	
	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4
Panel A: Pre-GFC								
ESNonGAAP	1.265^{***}	1.447^{***}	0.010y	0.143^{***}	-0.027	-0.004	0.006	0.006
	(5.61)	(6.22)	(0.35)	(4.15)	(-1.21)	(-0.12)	(0.48)	(0.48)
ESGAAP	0.078^{***}	-0.057^{***}	0.217^{*}	-0.103^{***}	0.250^{*}	0.003	0.226^{*}	0.001
	(3.76)	(-4.33)	(1.96)	(-4.78)	(2.21)	(0.08)	(2.40)	(0.03)
Intercept	0.004^{***}	0.004^{***}	0.005^{***}	0.005^{***}	0.005^{***}	0.005^{***}	0.005^{***}	0.005^{***}
	(4.30)	(3.96)	(4.42)	(4.58)	(4.55)	(4.08)	(4.61)	(4.55)
Adj R^2	0.0227	0.0242	0.0043	0.0029	0.0048	-0.0003	0.0043	-0.0002
Model F	25.880^{***}	26.119^{***}	3.438^{*}	8.029^{***}	2.831	0.008	3.107^{*}	0.361
BIC	-21047	-21058	-20916	-20907	-20920	-20884	-20917	-20885
BIC Rank	2	1	5	6	3	8	4	7
Panel B: GFC								
ESNonGAAP	0.074	0.094	0.121^{*}	0.152^{**}	-0.002	-0.018	0.056^{*}	0.057^{*}
	(0.95)	(1.16)	(1.96)	(2.93)	(-0.08)	(-1.37)	(1.98)	(1.99)
ESGAAP	0.050	0.015	-0.046	-0.039	0.078	0.039	0.083	0.028
	(0.91)	(0.56)	(-0.45)	(-1.02)	(1.08)	(1.49)	(1.32)	(1.05)
Intercept	0.003	0.003^{*}	0.003^{**}	0.003^{*}	0.003	0.003^{*}	0.003^{*}	0.003^{**}
	(1.86)	(2.21)	(2.76)	(2.53)	(1.69)	(2.34)	(2.06)	(2.75)
Adj R^2	0.0012	0.0010	0.0037	0.0046	0.0007	0.0001	0.0061	0.0054
Model F	1.551	1.414	3.827^{*}	3.393^{*}	0.608	1.160	6.120^{**}	6.317^{**}
BIC	-4903	-4902	-4908	-4909	-4902	-4901	-4912	-4911
BIC Rank	5	6	4	3	6	8	1	2
Panel C: Post-GFC								
ESNonGAAP	0.730^{*}	0.825^{**}	0.091	0.258^{***}	0.032	0.011	0.019	0.024
	(2.56)	(3.01)	(1.43)	(3.96)	(0.76)	(0.15)	(0.86)	(1.08)
ESGAAP	0.269^{*}	0.050	0.373^{*}	-0.005	0.422^{*}	0.084	0.452^{**}	0.097^{*}
	(2.27)	(1.21)	(2.33)	(-0.08)	(2.46)	(1.13)	(3.00)	(2.00)
Intercept	-0.001	-0.001	0.000	0.001	-0.000	0.000	0.000	0.001
	(-0.58)	(-0.57)	(0.19)	(0.38)	(-0.18)	(0.13)	(0.27)	(0.50)
Adj R^2	0.0218	0.0197	0.0109	0.0065	0.0107	0.0035	0.0111	0.0047
Model F	13.589^{***}	6.255^{**}	6.131^{**}	7.413^{***}	6.682^{**}	1.604	6.355^{**}	4.231^{*}
BIC	-14138	-14127	-14085	-14064	-14084	-14049	-14085	-14055
BIC Rank	1	2	3	6	5	8	3	7

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, CAR, is the cumulative market-adjusted abnormal returns over a three-day window centred around the earnings announcement date. ESNonGAAP represents the following variables for IBES, CORE, CE and CF models: ESIBES = IBES minus Forecast. ESCORE = CORE minus Forecast. ESCE = IBES minus Forecast. ESCF = IBES minus Forecast. ESGAAP represents ESGAAP1 (Model 3) or ESGAAP2 (Model 4). ESGAAP1 = GAAP1 minus Forecast, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. ESGAAP2 = GAAP2 minus Forecast, where GAAP2 is income before extraordinary items per share reported under GAAP. Forecast = I/B/E/S median consensus forecasted earnings. All earnings minus forecast variables are scaled by share price at t-7.

In relation to model performance, IBES models outperform other models in both the pre- and post-GFC periods based on BIC. Table 4.11 shows that the evidence for this is very strong. The level of evidence is weaker during the GFC.

Table 4.11: CAR Model: S&P 500 Sample Excluding Financial Sector Firms - Difference in BIC between Models (Comparison of Model Performance using BIC)

			IBES		CORE		CE		CF	
			Model 3	Model 4	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4
Pre-GFC	IBES	Model 3	0							
		Model 4	-11	0						
	CORE	Model 3	131	142	0					
		Model 4	140	151	9	0				
	CE	Model 3	127	138	-4	-13	0			
		Model 4	163	174	32	23	36	0		
	CF	Model 3	130	141	-1	-10	3	-33	0	
		Model 4	162	173	31	22	35	-1	32	0
GFC	IBES	Model 3	0							
		Model 4	1	0						
	CORE	Model 3	-5	-6	0					
		Model 4	-6	-7	-1	0				
	CE	Model 3	1	0	6	7	0			
		Model 4	2	1	7	8	1	0		
	CF	Model 3	-9	-10	-4	-3	-10	-11	0	
		Model 4	-8	-9	-3	-2	-9	-10	1	0
Post-GFC	IBES	Model 3	0							
		Model 4	11	0						
	CORE	Model 3	53	42	0					
		Model 4	74	63	21	0				
	CE	Model 3	54	43	1	-20	0			
		Model 4	89	78	36	15	35	0		
	CF	Model 3	53	42	0	-21	-1	-36	0	
		Model 4	83	72	30	9	29	-6	30	0

The difference in BIC equals row model BIC less column model BIC. A negative figure indicates the row model is a better fit than the column model. The different grades of evidence corresponding to minimum BIC difference according to Raftery (1995) are:

Minimum BIC Difference of 0: Weak
Minimum BIC Difference of 2: Positive
Minimum BIC Difference of 6: Strong
Minimum BIC Difference of 10: Very Strong

Table 4.12 shows the results for firms not included in the S&P 500 index. All models are moderately to strongly significant across all periods.

Table 4.12: CAR Model: Non-S&P 500 Sample - Multivariate OLS Regression 3-Day Window Centred Around Earnings Announcement Date
(Pre-GFC: Firm cluster = 1,771 and Time cluster = 25; GFC: Firm cluster = 1,664 and Time cluster = 9; Post-GFC: Firm cluster = 1,530 and Time cluster = 16

Model 5: $CAR_i = \alpha_0 + \beta_1 ESNonGAAP_i + \beta_2 ESGAAP1_i + \varepsilon_i$

Model 6: $CAR_i = \alpha_0 + \beta_1 ESNonGAAP_i + \beta_2 ESGAAP2_i + \varepsilon_i$

	IBES		CORE		CE		CF	
	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4
Panel A: Pre-GFC								
ESNonGAAP	0.222***	0.247***	0.032	0.068*	0.015	0.003	0.002	0.003
	(3.62)	(3.90)	(1.76)	(2.31)	(1.52)	(0.24)	(0.41)	(0.61)
ESGAAP	0.080*	0.029**	0.128***	0.021	0.146***	0.064**	0.161***	0.067***
	(2.48)	(3.04)	(3.53)	(1.38)	(3.81)	(3.20)	(4.14)	(4.05)
Intercept	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***
	(5.73)	(5.70)	(5.78)	(6.07)	(5.67)	(5.64)	(5.70)	(5.72)
Adj R^2	0.0073	0.0069	0.0042	0.0029	0.0041	0.0024	0.0040	0.0024
Model F	16.972***	19.271***	29.694***	23.001***	30.183***	25.586***	27.025***	25.876***
BIC	-82376	-82364	-82278	-82237	-82275	-82221	-82272	-82222
BIC Rank	1	2	3	6	4	8	5	7
Panel B: GFC								
ESNonGAAP	0.054***	0.052**	0.046***	0.037	0.020*	0.031	0.016	0.017
	(3.79)	(2.77)	(3.97)	(1.64)	(2.48)	(1.27)	(1.67)	(1.78)
ESGAAP	0.023	0.015	0.000	0.007	0.022	-0.004	0.046*	0.027**
	(1.13)	(1.62)	(0.02)	(0.59)	(0.96)	(-0.15)	(2.07)	(2.85)
Intercept	0.003	0.003*	0.003	0.003	0.002	0.002	0.002	0.003
	(1.86)	(2.02)	(1.88)	(1.96)	(1.68)	(1.49)	(1.47)	(1.69)
Adj R^2	0.0030	0.0032	0.0025	0.0026	0.0024	0.0021	0.0021	0.0025
Model F	8.408***	9.295***	6.223**	6.543**	5.803**	5.634**	5.732**	6.588**
BIC	-18391	-18393	-18387	-18388	-18386	-18384	-18384	-18387
BIC Rank	2	1	4	3	6	7	7	4
Panel C: Post-GFC								
ESNonGAAP	0.100**	0.126***	0.004	0.069***	0.010	0.017	0.013	0.013
	(3.10)	(3.92)	(0.42)	(3.93)	(1.09)	(0.86)	(1.45)	(1.56)
ESGAAP	0.079***	0.028***	0.113***	0.009	0.108***	0.042	0.117***	0.058***
	(6.30)	(4.04)	(5.61)	(0.61)	(5.31)	(1.78)	(7.14)	(5.34)
Intercept	0.002*	0.002*	0.002*	0.002*	0.002*	0.002	0.002*	0.002*
	(2.30)	(2.23)	(2.35)	(2.39)	(2.18)	(1.88)	(2.36)	(2.38)
Adj R^2	0.0100	0.0081	0.0075	0.0052	0.0076	0.0041	0.0080	0.0046
Model F	36.814***	23.843***	31.437***	22.695***	31.941***	18.481***	31.941***	20.964***
BIC	-45174	-45140	-45129	-45088	-45130	-45068	-45138	-45076
BIC Rank	1	2	5	6	4	8	3	7

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, *CAR*, is the cumulative market-adjusted abnormal returns over a three-day window centred around the earnings announcement date. ESNonGAAP represents the following variables for IBES, CORE, CE and CF models: ESIBES = IBES minus Forecast. ESCORE = CORE minus Forecast. ESCE = IBES minus Forecast. ESCF = IBES minus Forecast. ESGAAP represents ESGAAP1 (Model 3) or ESGAAP2 (Model 4). ESGAAP1 = GAAP1 minus Forecast, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. ESGAAP2 = GAAP2 minus Forecast, where GAAP2 is income before extraordinary items per share reported under GAAP. Forecast = I/B/E/S median consensus forecasted earnings. All earnings minus forecast variables are scaled by share price at *t*-7.

ESIBES is statistically significant across all periods but ESCF is not significant across all periods. ESCORE (Model 4) is significant in both the pre- and post-GFC periods but ESCORE (Model 3) is significant only in the GFC period. ESCE is marginally significant only in the GFC period. ESGAAP is generally significant in the pre-and post-GFC periods. During the GFC, however, ESGAAP is only statistically significant in relation to ESCF.

These results indicate that ESGAAP has incremental information content relative to IBES, CORE, CE and CF measures of earnings in the pre- and post-GFC periods. Furthermore, the level of significance for ESGAAP has generally increased from the pre-GFC period to the post-GFC period. This suggests a shift in investors' focus on the informativeness of GAAP earnings after the GFC.

Model performance based on the BIC ranking shows that IBES models outperform other models across the three periods. The model performance of CORE deteriorated in the post-GFC period.

Table 4.13 shows that the evidence is generally strong to very strong that the three highest ranked models in both the pre- and post-GFC periods are a better fit relative to the remaining models.

Table 4.13: CAR Model: Non-S&P 500 Sample - Difference in BIC between Models
(Comparison of Model Performance using BIC)

			IBES		CORE		CE		CF	
			Model 3	Model 4	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4
Pre-GFC	**IBES**	Model 3	0							
		Model 4	12	0						
	CORE	Model 3	98	86	0					
		Model 4	139	127	41	0				
	CE	Model 3	101	89	3	-38	0			
		Model 4	155	143	57	16	54	0		
	CF	Model 3	104	92	6	-35	3	-51	0	
		Model 4	154	142	56	15	53	-1	50	0
GFC	**IBES**	Model 3	0							
		Model 4	-2	0						
	CORE	Model 3	4	6	0					
		Model 4	3	5	-1	0				
	CE	Model 3	5	7	1	2	0			
		Model 4	7	9	3	4	2	0		
	CF	Model 3	7	9	3	4	2	0	0	
		Model 4	4	6	0	1	-1	-3	-3	0
Post-GFC	**IBES**	Model 3	0							
		Model 4	34	0						
	CORE	Model 3	45	11	0					
		Model 4	86	52	41	0				
	CE	Model 3	44	10	-1	-42	0			
		Model 4	106	72	61	20	62	0		
	CF	Model 3	36	2	-9	-50	-8	-70	0	
		Model 4	98	64	53	12	54	-8	62	0

The difference in BIC equals row model BIC less column model BIC. A negative figure indicates the row model is a better fit than the column model. The different grades of evidence corresponding to minimum BIC difference according to Raftery (1995) are:

Minimum BIC Difference of 0: Weak
Minimum BIC Difference of 2: Positive
Minimum BIC Difference of 6: Strong
Minimum BIC Difference of 10: Very Strong

4.4 DISCUSSION

Similar to the results for the Ohlson models, the results for the CAR models show mixed evidence on the information content of the alternative earnings measures. The results show only CE Model 4 is statistically significant in the financial sector sample for the GFC period. In the S&P 500 sample for the GFC and post-GFC periods, most models are not statistically significant. Further tests on a sub-sample of non-financial firms in the S&P 500 show that financial sector firms have an impact on my S&P 500 sample results in the post-GFC period. This may be due to the continuing effects of the GFC on large financial firms. A notable result for the S&P 500 sample is the negative and statistically significant coefficient for ESGAAP2 in the IBES and CORE models.

The inverse relationship between this GAAP earnings surprise and CAR suggests that investors view the earnings surprise as bad news. The value relevance test of the S&P 500 sample, in Chapter 3, shows DIFF2 is not significant in relation to IBES and CORE in the pre-GFC period, however, the coefficients are negative.

My results provide limited support for prior studies that find IBES earnings are more informative than GAAP earnings (Albring *et al.*, 2010; Bhattacharya *et al.*, 2003; Brown and Sivakumar, 2003). The models show that across all samples, GAAP earnings have incremental information content over IBES, CORE and CE. Generally, ESGAAP1 shows the stronger result of the two GAAP earnings measures, both in terms of the magnitude of the coefficient and the level of statistical significance, with the exception of the S&P 500 sample where ESGAAP2 is negative.

I note that all my earnings surprise measures are derived using analysts' forecasts from IBES. This classic errors in variables problem biases the results in favour of IBES earnings (Bradshaw, 2011). Therefore, my results are more conservative when statistical significance is found in other earnings variables.

For financial sector firms, my results show little difference in the information content of GAAP earnings between the pre- and post-GFC periods. I find CF Model 3 to be superior in both these periods. In the non-financial sector sample, the results show that investors find ESIBES to be more informative in comparison to other non-GAAP earnings in the pre- and post-GFC periods. Nevertheless, investors also find GAAP earnings informative, particularly ESGAAP1.

Table 4.14 presents a summary of all model rankings based on BIC for all samples and models. My results do not indicate that GAAP informativeness is uniform across all samples. I do not find GAAP earnings to be systematically more informative in the GFC period in comparison to the pre- and post GFC periods. Other than financial firms, I find that IBES models generally outperform other models in the pre- and post-GFC periods. My CAR results generally support prior studies in respect to IBES being informative (Bhattacharya *et al.*, 2003; Brown and Sivakumar, 2003). However, my results also show that GAAP earnings have incremental information content.

Table 4.14: Summary of BIC Ranking by Model and Sample

	IBES		CORE		CE		CF	
	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4
Financial								
- Pre-GFC	3	7	3	5	1	6	1	7
- GFC	4	4	1	3	6	1	6	6
- Post-GFC	2	6	3	6	4	8	1	5
Non-Financial								
- Pre-GFC	1	2	3	6	4	7	5	7
- GFC	4	1	1	1	7	8	6	5
- Post-GFC	1	2	5	6	4	8	3	7
S&P 500								
- Pre-GFC	2	1	4	6	3	8	4	7
- GFC	3	3	3	3	7	8	1	1
- Post-GFC	2	1	5	5	7	8	4	2
Non-S&P 500								
- Pre-GFC	1	2	3	6	4	8	5	7
- GFC	2	1	4	3	6	7	7	4
- Post-GFC	1	2	5	6	4	8	3	7
S&P 500 and Non-Financial								
- Pre-GFC	2	1	5	6	3	8	4	7
- GFC	5	6	4	3	6	8	1	2
- Post-GFC	1	2	3	6	5	8	3	7

Overall, my results suggest that investors shift their focus away from GAAP earnings during the GFC and returned to GAAP earnings in the post-GFC period, except for large firms. In the S&P 500 sample, there is a shift away from GAAP earnings during the GFC and investors do not find GAAP earnings to be informative in the post-GFC period. Similarly, the results of the non-S&P 500 sample show GAAP earnings are generally informative in the pre-GFC period but not during GFC. I find the evidence of a shift in investors' focus generally consistent with my results in Chapter 3.

On the other hand, the results of the non-S&P 500 and the non-financial sector samples provide evidence that investors returned to GAAP earnings in the post-GFC period. They find GAAP earnings to be more informative in relation to non-GAAP earnings in the post-GFC period relative to the pre-GFC period. An explanation may be that smaller firms have fewer alternative sources of information and investors place greater focus on non-GAAP earnings. These results show that the GFC affected how informative GAAP earnings are to investors.

4.5 SUMMARY AND CONCLUSIONS

The results from my CAR models are mixed. I do not find investors placing greater emphasis on GAAP earnings during the GFC. It is argued in the literature that IBES and CORE earnings are more informative than GAAP earnings. My results only partly support this argument. I find that IBES earnings models rank higher than other earnings models in the non-financial sector, S&P 500 and non-S&P 500 samples in both the pre- and post-GFC periods but not in the financial sector sample. CORE earnings models, however, generally rank below IBES earnings models.

Similar to my Ohlson models' results, possible explanations for the results reported in this chapter include the use of quarterly data instead of annual data and the time period covered in this study. Additionally, the GFC period is characterised by high volatility and uncertainty in the financial market. This will impact my cumulative abnormal returns measure, the financial sector sample and the GFC period of my study.

My results, however, do show that the GFC has an impact on the informativeness of GAAP earnings. In relation to *RQ1a*, there is evidence of a shift away from GAAP earnings during the GFC. There is also evidence that investors return to GAAP earnings in the post-GFC period in the non-S&P 500 and non-financial sector samples, but not in the other samples.

CHAPTER 5

INFORMATION ASYMMETRY

5.1 INTRODUCTION

In this chapter, I investigate the impact of information asymmetry on the value relevance of GAAP and non-GAAP earnings to address *RQ2*. Specifically, I examine whether the level of information asymmetry is systematically associated with the emphasis investors place on GAAP and non-GAAP earnings and whether the GFC has an impact on this association.

In Chapter 3, I find evidence that partly supports the findings of prior studies; however, it is not evident that IBES or CORE earnings are consistently more value relevant than GAAP earnings. My results show that the value relevance of non-GAAP earnings is sensitive to sample selection and the period windows used in this study. Similarly, the incremental value relevance of GAAP earnings is also sensitive to sample selection and period windows. Furthermore, I provide evidence of a shift in investors' emphasis on alternative earnings measures between the pre- and post-GFC periods. In summary, my results indicate that non-GAAP earnings are value relevant and that GAAP earnings have incremental value relevance in the financial sector sample in the pre- and post-GFC periods. In the non-financial sector and S&P 500 samples, there is a discernible shift in investors' focus from the pre-GFC through to the post-GFC period. Non-GAAP earnings generally become more statistically significant in the post-GFC period. In the non-S&P 500 sample, generally both GAAP and non-GAAP earnings do not have incremental value relevance and, of the non-GAAP earnings, only IBES is statistically significant in the post-GFC period.

In this chapter, I investigate the impact of information asymmetry on the results reported in Chapter 3. Specifically, I investigate whether there are systematic differences in the value relevance of non-GAAP and GAAP earnings between firms with a high level of information asymmetry and firms with a low level of information asymmetry. If there are systematic differences, it is more likely to be evident in firms with extreme levels of information asymmetry. Consequently, I focus on firms with either high or low levels of information asymmetry in my analysis. Consistent with Maskara and Mullineaux (2011), I construct an information asymmetry index (IAI) to measure the level of information asymmetry for firms in my sample. I assign firms into quintiles based on the IAI.[21]

I use two different approaches to investigate the impact of information asymmetry. In the first approach, I include a dummy variable (IA) where 1 indicates firms with a high level (quintile 5) of information asymmetry and 0 indicates firms with a low level (quintile 1) of information asymmetry in my Ohlson model. Firms in quintiles 2 through 4 are not included in the model as I focus on the extreme levels of information asymmetry. I also include interactions of this dummy variable with BV, NonGAAPE and DIFF in my Ohlson model. I re-estimate my model and examine the impact of information asymmetry on my results. As this approach includes interaction terms in the model, the interpretation of the results is different to the base model without interaction terms. Specifically, the unique effect of the variable of interest is the sum of the coefficients of that variable's main effect and interaction term. For example, the unique effect of book value of equity on share price is the sum of the coefficients of book value of equity (main effect) and its interaction with the information asymmetry dummy. Also, the coefficient of the interaction term reflects the marginal effect of book value of equity when the dummy variable equals 1. Therefore, a positive (negative) coefficient on the interaction term indicates the increased (decreased) effect of book value of equity.

In the second approach, I re-estimate my Ohlson model separately for firms with a high level (quintile 5) of information asymmetry and for firms with a low level (quintile 1) of information asymmetry, i.e., the level of information asymmetry is not included as a control variable in the model.

My expectations were discussed in detail in Chapter 2. In summary, I expect to find a change in investors' focus between the pre-GFC period, during the GFC and in the post-GFC period. These periods reflect contrasting economic conditions. During the GFC, economic conditions are at their most extreme. If investors are seeking more credible information, I expect to find stronger results for GAAP earnings in the post-GFC period relative to the pre-GFC period. Nevertheless, as discussed in Chapter 3, the different samples may yield different results. The financial sector and S&P 500 samples are comparatively more homogeneous (e.g., a single sector, or only large firms) relative to

[21] The construction of the IAI results in a significant number of ties. When forming quintiles, groups of ties are sorted into the next quintile, i.e., the ties are not split to obtain equal number of observations per quintile. Consequently, the number of observations per quintiles is not always equal.

the non-financial sector and non-S&P 500 samples and this may impact on the results. Prior studies (e.g., Easley and O'Hara (2004)) show that investors price information risk. Therefore, I expect to observe that high information asymmetry is negatively associated with share price. I also expect to observe that firms with high information asymmetry will be discounted by investors, i.e., investors will price down the earnings of firms with high information asymmetry. Furthermore, if investors are seeking more credible earnings information (i.e., GAAP earnings) to mitigate information risk, I expect to observe stronger incremental value relevance of GAAP earnings in the post-GFC period relative to the pre-GFC period.

Consistent with Chapter 3, the corresponding NonGAAPE measures in Equations 2.3 and 2.4 in Chapter 2 are IBES, CORE, CE and CF in the tables. The corresponding DIFF measures are DIFF1 and DIFF2 for Equation 2.3 (denoted as Model 1 in tables) and Equation 2.4 (denoted as Model 2 in tables), respectively. Furthermore, references to the value relevance of non-GAAP earnings denote comparative value relevance between these earnings, i.e., IBES, CORE, CE and CF, and references to DIFF1, DIFF2 and GAAP earnings denote incremental value relevance between GAAP and non-GAAP earnings.

Table 5.1 presents a summary of the two highest ranked models, with main effects and interaction terms, for all samples and periods that I test in this chapter. It shows that the CE models generally outperform other models except in the financial sector sample. The evidence that the highest ranked model performs much better than the next ranked models is generally very strong. Interestingly, it appears that investors place relatively greater emphasis on cash earnings after controlling for information asymmetry.

Table 5.1: Summary of Two Highest Ranked Models for All Samples with Information Asymmetry Index Dummy and Interaction Terms (Comparison of Model Performance using BIC)

$$\text{Model 1: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 IA_{it} + \beta_5 IA*BV_{it} + \beta_6 IA*NonGAAPE_{it} + \beta_7 IA*DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 IA_{it} + \beta_5 IA*BV_{it} + \beta_6 IA*NonGAAPE_{it} + \beta_7 IA*DIFF2_{it} + \varepsilon_{it}$$

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Financial								
- Pre-GFC	1 (8)	2 (72)						
- GFC							2 (27)	1 (2)
- Post-GFC					1 (12)	2 (308)		
Non-Financial								
- Pre-GFC					1 (53)	2 (8,367)		
- GFC					1 (66)	2 (1,555)		
- Post-GFC					1 (367)	2 (1,984)		
S&P 500								
- Pre-GFC					1 (36)	2 (1,129)		
- GFC					2 (152)	1 (28)		
- Post-GFC		2 (3)			1 (47)			
Non-S&P 500								
- Pre-GFC					1 (144)	2 (4,509)		
- GFC					1 (47)	2 (915)		
- Post-GFC					1 (32)	2 (298)		

Models ranked 1 and 2 by their BIC are shown. The absolute difference in BIC values between the model and the next lower ranked model is shown in parentheses. The different grades of evidence corresponding to minimum BIC difference according to Raftery (1995) are:

Minimum BIC Difference of 0: Weak
Minimum BIC Difference of 2: Positive
Minimum BIC Difference of 6: Strong
Minimum BIC Difference of 10: Very Strong

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. IA = 1 if the information asymmetry index (IAI) quintile is 5 and 0 if the IAI quintile is 1. IA*BV = Interaction term of IAI with book value of common equity per share. IA*NonGAAPE = Interaction term of IAI with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. IA*DIFF = Interaction term of IAI with the corresponding DIFF measure of DIFF1 and DIFF2.

Table 5.2 presents a summary of my Ohlson model regressions for each sample by period window and models. This table highlights the key variables that are statistically significant at p = 0.05 or stronger. The negative sign of significant variables are indicated in brackets.

Table 5.2: Summary of Significant Key Variables for Multivariate OLS Regression Results by Sample, Models and High/Low Information Asymmetry Index Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Financial Sector Sample

Pre-GFC

		Model 1			Model 2		
	IA Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	
	High	sig	sig		sig	sig	
CORE	Low	sig			sig		
	High	sig		sig	sig		
CE	Low	sig		sig (-)	sig		sig (-)
	High	sig	sig	sig	sig	sig	
CF	Low	sig			sig	sig	sig
	High	sig	sig	sig	sig	sig	sig

GFC

		Model 1			Model 2		
	IA Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low		sig	sig		sig	sig
	High	sig			sig		sig
CORE	Low		sig			sig	
	High	sig			sig		sig
CE	Low						
	High	sig		sig (-)	sig		
CF	Low	sig		sig	sig		sig
	High	sig			sig		

Post-GFC

		Model 1			Model 2		
	IA Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		sig (-)
	High	sig	sig	sig	sig	sig	sig
CORE	Low	sig			sig		
	High	sig	sig	sig	sig	sig	
CE	Low	sig			sig		
	High	sig	sig	sig	sig	sig	
CF	Low	sig			sig		
	High	sig	sig	sig	sig	sig	sig

Panel B: Non-Financial Sector Sample

Pre-GFC

		Model 1			Model 2		
	IA Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		
	High	sig	sig (-)	sig (-)	sig	sig (-)	sig (-)
CORE	Low	sig			sig		sig
	High	sig	sig (-)	sig (-)	sig	sig (-)	sig
CE	Low	sig			sig		sig
	High	sig	sig (-)	sig (-)	sig	sig (-)	
CF	Low	sig			sig		
	High	sig	sig (-)	sig (-)	sig		

GFC

		Model 1			Model 2		
	IA Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig	sig (-)	sig	sig	sig (-)
	High	sig			sig		sig
CORE	Low	sig	sig (-)		sig	sig (-)	sig
	High	sig			sig		
CE	Low	sig	sig (-)	sig (-)	sig		
	High	sig	sig	sig	sig	sig	
CF	Low	sig	sig (-)	sig (-)	sig		
	High	sig	sig	sig	sig	sig	sig

Post-GFC

		Model 1			Model 2		
	IA Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig	sig	sig	sig	
	High	sig	sig	sig	sig	sig	
CORE	Low	sig	sig	sig	sig	sig (-)	sig
	High	sig	sig	sig	sig	sig	sig
CE	Low	sig	sig	sig	sig	sig	sig
	High	sig	sig	sig	sig		
CF	Low	sig	sig	sig	sig	sig	sig
	High	sig	sig	sig	sig		

Panel C: S&P 500 Sample

Pre-GFC

		Model 1			Model 2		
	IA Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	
	High	sig	sig		sig	sig	sig (-)
CORE	Low	sig	sig		sig	sig	
	High	sig	sig	sig	sig		
CE	Low	sig	sig	sig	sig	sig	sig
	High	sig	sig	sig	sig		
CF	Low	sig	sig	sig	sig	sig	sig
	High	sig			sig		

GFC

		Model 1			Model 2		
	IA Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	
	High	sig			sig		
CORE	Low	sig			sig		
	High	sig			sig		
CE	Low	sig			sig	sig	
	High	sig			sig		
CF	Low	sig			sig	sig	sig
	High	sig	sig	sig	sig	sig	sig

Post-GFC

		Model 1			Model 2		
	IA Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low		sig			sig	
	High	sig	sig	sig	sig	sig	sig
CORE	Low		sig	sig		sig	
	High	sig	sig	sig	sig	sig	sig
CE	Low		sig	sig		sig	sig
	High	sig	sig	sig	sig	sig	
CF	Low		sig	sig	sig	sig	sig
	High	sig	sig	sig	sig	sig	sig

Panel D: Non-S&P 500 Sample

Pre-GFC

		Model 1			Model 2		
	IA Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig	sig	
	High	sig	sig (-)	sig (-)	sig		
CORE	Low	sig		sig	sig		sig
	High	sig	sig (-)		sig	sig (-)	
CE	Low	sig			sig		
	High	sig	sig (-)	sig (-)	sig	sig (-)	
CF	Low	sig			sig		
	High	sig	sig (-)	sig (-)	sig	sig (-)	sig (-)

GFC

		Model 1			Model 2		
	IA Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig		sig (-)	sig		sig (-)
	High	sig			sig		sig
CORE	Low	sig	sig (-)		sig	sig (-)	sig
	High	sig			sig		
CE	Low	sig	sig (-)	sig (-)	sig	sig (-)	
	High	sig	sig		sig	sig	
CF	Low	sig	sig (-)	sig (-)	sig	sig (-)	sig (-)
	High	sig	sig	sig	sig	sig	sig

Post-GFC

		Model 1			Model 2		
	IA Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	sig (-)
	High	sig	sig	sig	sig	sig	
CORE	Low	sig	sig		sig	sig	
	High	sig	sig	sig	sig		sig
CE	Low	sig	sig		sig	sig	
	High	sig	sig	sig	sig		
CF	Low	sig	sig	sig	sig	sig	sig
	High	sig	sig	sig	sig		

sig indicates the variable is statistically significant and positive at p = 0.05 or stronger. sig (-) indicates the variable is statistically significant and negative at p = 0.05 or stronger. The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. IA = information asymmetry index (IAI) quintile, which is the average of six commonly used measures of information asymmetry (normalised analysts' forecast errors, dispersion of analysts forecast, volatility of residual returns, volatility of abnormal returns around earnings announcements, firm age and bid-ask spreads). Low and High indicate low information asymmetry and high information asymmetry, respectively.

My results show that the GFC and information asymmetry have an impact on the value relevance of GAAP and non-GAAP earnings. My key findings are that: GAAP earnings have incremental information content; the peak of the GFC caused a shift in investors' emphasis on both GAAP and non-GAAP earnings; and the extreme levels of information asymmetry affect the value relevance of GAAP and non-GAAP earnings differently. Overall, I find that GAAP earnings have incremental value relevance over non-GAAP earnings, however, this is conditioned by the level of information asymmetry. Both GAAP and non-GAAP earnings attain stronger statistical significance and are relatively more value relevant at a high level of information asymmetry in the post-GFC period, in comparison to the pre-GFC period, for the non-financial and non-S&P 500 samples (Panel B and Panel D). However, after the GFC, non-GAAP earnings are value relevant across most levels of information asymmetry in these two samples. Furthermore, I find that that the positive or negative effect of information on share price is sensitive to the period window and sample selection. I also find an increase in investor emphasis on non-GAAP earnings in the post-GFC period in comparison the pre-GFC period. Finally, I find a shift in investors' emphasis on GAAP earnings that is consistent with GAAP earnings being perceived as more credible and reliable.

5.2 RESULTS

5.2.1 Financial Sector Sample

5.2.1.1 Model Estimation with Main Effects and Interaction Terms

Table 5.3 shows the financial sector sample estimation results for models with main effects and interaction terms. All models are statistically significant across all period windows. In the pre-GFC period, BV is strongly significant across all models. IBES and CF are marginally significant, however, CORE and CE are not significant. DIFF1 and DIFF2 are marginally significant only in relation to CE and CF. IA is strongly significant and negative in relation to IBES and CF but only marginally significant and negative in relation to CORE. The results of the main effects show that investors are focused on the book value of net assets during the pre-GFC period. As expected, high information asymmetry is negatively related to share price. Furthermore, the interaction term, IA*BV, is statistically significant indicating that the book value of net assets is incrementally value relevant when information asymmetry is high. IA*NonGAAPE is only statistically significant in relation to CE, and IA*DIFF is only statistically significant in relation to CORE and CE. The IBES and CF models are ranked highest and lowest, respectively, based on BIC.

Table 5.3: Ohlson Model: Financial Sector Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with Information Asymmetry Index Dummy and Interaction Terms as Controls

$$\text{Model 1: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 IA_{it} + \beta_5 IA * BV_{it} + \beta_6 IA * NonGAAPE_{it} + \beta_7 IA * DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 IA_{it} + \beta_5 IA * BV_{it} + \beta_6 IA * NonGAAPE_{it} + \beta_7 IA * DIFF2_{it} + \varepsilon_{it}$$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.943***	0.939***	1.323***	1.322***	1.332***	1.343***	0.870***	0.839***
	(4.50)	(4.33)	(10.02)	(10.06)	(11.44)	(11.52)	(3.85)	(3.53)
NonGAAPE	12.727*	12.924*	6.511	6.511	1.770	1.616	9.120	9.936*
	(2.36)	(2.34)	(1.15)	(1.15)	(0.58)	(0.52)	(1.94)	(2.01)
DIFF	-4.874	-3.634	-2.469	0.330	-14.317*	-15.104*	9.013	9.796*
	(-0.70)	(-0.55)	(-0.47)	(0.06)	(-2.22)	(-2.27)	(1.91)	(1.97)
IA	-10.516***	-10.671***	-6.864*	-5.591	-1.265	-1.557	-12.916***	-12.623***
	(-3.99)	(-4.04)	(-1.97)	(-1.56)	(-0.52)	(-0.59)	(-3.86)	(-3.83)
IA*BV	0.530*	0.521*	0.212	0.288	-0.416	-0.292	0.488**	0.523**
	(2.57)	(2.46)	(1.00)	(1.11)	(-1.71)	(-1.39)	(2.70)	(2.86)
IA*NonGAAPE	-5.933	-5.824	-3.551	-6.320	14.140**	10.572*	2.572	1.354
	(-1.02)	(-0.98)	(-0.52)	(-0.86)	(2.72)	(2.49)	(0.42)	(0.23)
IA*DIFF	-3.176	-2.320	27.600***	12.205	24.069**	22.511**	1.940	0.766
	(-0.34)	(-0.25)	(4.70)	(1.54)	(3.08)	(3.13)	(0.32)	(0.13)
Intercept	13.798***	13.896***	10.060***	9.983***	9.720***	9.927***	17.583***	17.475***
	(5.45)	(5.46)	(3.57)	(3.51)	(4.65)	(4.69)	(4.50)	(4.57)
N	1573	1573	1568	1568	1611	1611	1627	1627
Adj R^2	0.8967	0.8961	0.9024	0.8900	0.8687	0.8645	0.8628	0.8627
BIC	14271	14279	14351	14538	14923	14973	15475	15477
BIC Rank	1	2	3	4	5	6	7	8

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.118	0.113	0.321	0.319	0.427	0.425	0.552***	0.543***
	(0.64)	(0.62)	(1.88)	(1.92)	(1.47)	(1.45)	(4.97)	(4.87)
NonGAAPE	36.635**	37.078**	27.280**	27.570**	24.270	24.371	4.004	4.526
	(3.07)	(3.10)	(2.67)	(2.71)	(1.66)	(1.66)	(1.78)	(1.93)
DIFF	8.024*	9.091*	7.905	9.660	-1.331	-0.645	3.376*	3.892*
	(2.18)	(2.22)	(1.18)	(1.23)	(-0.15)	(-0.07)	(2.34)	(2.43)
IA	-13.554***	-13.444***	-16.125***	-16.104***	-9.927***	-10.498***	-20.022***	-19.855***
	(-4.23)	(-4.33)	(-4.63)	(-4.52)	(-3.56)	(-3.91)	(-4.67)	(-4.71)
IA*BV	0.927***	0.960***	0.709***	0.741***	0.575*	0.606*	0.493***	0.508***
	(4.42)	(4.56)	(3.72)	(3.82)	(2.03)	(2.09)	(4.94)	(5.20)
IA*NonGAAPE	-36.626**	-37.064**	-27.226**	-27.480**	-24.175	-24.175	-4.033	-4.486
	(-3.09)	(-3.12)	(-2.67)	(-2.71)	(-1.65)	(-1.63)	(-1.68)	(-1.76)
IA*DIFF	-7.355*	-7.656*	-7.677	-8.563	-2.228	0.063	-3.098	-3.539
	(-2.22)	(-2.04)	(-1.22)	(-1.14)	(-0.28)	(0.02)	(-1.92)	(-1.95)
Intercept	18.395***	17.977***	20.667***	20.111***	15.540***	15.636***	25.927***	25.744***
	(6.94)	(6.87)	(7.64)	(7.47)	(5.96)	(5.96)	(6.37)	(6.40)
N	466	466	471	471	463	463	472	472
Adj R^2	0.8624	0.8639	0.8510	0.8520	0.8565	0.8552	0.8796	0.8800
BIC	4335	4330	4413	4410	4354	4358	4303	4301
BIC Rank	4	3	8	7	5	6	2	1

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	0.872***	0.870***	0.921***	0.918***	0.966***	0.968***	0.900***	0.900***
	(9.56)	(9.74)	(8.76)	(8.95)	(8.86)	(9.10)	(7.48)	(7.53)
NonGAAPE	4.369	4.612	2.374	2.666	-0.718	-0.585	1.415	1.435
	(1.63)	(1.72)	(1.10)	(1.24)	(-0.29)	(-0.24)	(0.51)	(0.55)
DIFF	-4.023	-4.061*	-4.074	-4.232	-3.880	-4.436	1.070	1.092
	(-1.86)	(-1.98)	(-1.66)	(-1.68)	(-1.17)	(-1.36)	(0.38)	(0.40)
IA	-6.262	-6.458	-5.919	-6.035	-1.014	1.542	-2.205	-2.576
	(-1.86)	(-1.86)	(-1.52)	(-1.52)	(-0.31)	(0.43)	(-0.48)	(-0.58)
IA*BV	-0.152	-0.156	-0.210	-0.214	-0.447***	-0.572***	-0.382*	-0.372*
	(-1.28)	(-1.26)	(-1.40)	(-1.39)	(-3.71)	(-3.95)	(-2.36)	(-2.32)
IA*NonGAAPE	0.224	-0.264	2.285	1.770	4.957	3.494	1.520	1.476
	(0.07)	(-0.08)	(0.86)	(0.68)	(1.90)	(1.57)	(0.47)	(0.49)
IA*DIFF	7.815**	7.466**	7.999**	7.586**	6.947*	5.142	2.180	2.232
	(3.12)	(2.95)	(2.74)	(3.07)	(2.00)	(1.53)	(0.65)	(0.71)
Intercept	13.577***	13.601***	13.574***	13.598***	12.281***	12.200***	13.861***	13.854***
	(5.13)	(5.19)	(4.65)	(4.69)	(4.09)	(4.09)	(4.49)	(4.50)
N	1380	1380	1381	1381	1334	1334	1350	1350
Adj R^2	0.7697	0.7670	0.7635	0.7609	0.7693	0.7660	0.7567	0.7569
BIC	12276	12300	12364	12386	11828	11840	12148	12153
BIC Rank	5	6	7	8	1	2	3	4

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. IA = 1 if the information asymmetry index (IAI) quintile is 5 and 0 if the IAI quintile is 1. IA*BV = Interaction term of IAI with book value of common equity per share. IA*NonGAAPE = Interaction term of IAI with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. IA*DIFF = Interaction term of IAI with the corresponding DIFF measure of DIFF1 and DIFF2.

The results show that investors are generally more focused on the book value of net assets than earnings in the pre-GFC period. When information asymmetry is high, the results indicate that investors generally increase their focus on the book value of net assets in the pre-GFC period.

During the GFC, BV is only statistically significant in relation to CF. IBES and CORE are moderately significant. DIFF1 and DIFF2 are only marginally significant in relation to IBES and CF. IA is strongly significant and negative across all models. IA*BV is statistically significant and positive across all models. IA*NonGAAPE is moderately significant and negative in relation to IBES and CORE, and IA*DIFF is only marginally significant and negative in relation to IBES. These results show a shift in the emphasis investors place on the book value of net assets and earnings. The results for BV and IA*BV show that investors find the book value of net assets to be more value relevant when information asymmetry is high but not when information asymmetry is low, except in relation to CF.

GAAP earnings, however, are incrementally value relevant in relation to IBES at both high and low levels of information asymmetry. The negative sign of β_7 shows that investors decrease their focus on GAAP earnings when information asymmetry is high. Nevertheless, $\beta_3 + \beta_7$ remains positive indicating GAAP earnings are incrementally value relevant when information asymmetry is high. The CF models perform best based on BIC, indicating that investors are focused on cash flows during the GFC.

The results for the post-GFC period show another shift in investors' emphasis. BV is strongly significant across all models, however, IA*BV is only statistically significant in relation to CE and CF. IA and DIFF are generally not significant across all models. IA*DIFF, however, is marginally to moderately significant and positive in relation to IBES, CORE and CE. This indicates that GAAP earnings are incrementally value relevant and that investors place relatively greater emphasis on GAAP earnings when information asymmetry is high than when it is low. The CE models perform best, followed by the CF models, based on BIC, which indicates that investors are primarily focused on cash-based earnings in the post-GFC period.

5.2.1.2 Model Estimation by Low and High Information Asymmetry

Table 5.4 presents the financial sector sample estimation results, by low and high information asymmetry, for each non-GAAP earnings measure. All models are strongly significant.

In the pre-GFC period, the results for non-GAAP earnings are substantially similar in both Model 1 and Model 2. IBES and CF are generally significant but CORE is not significant at both high and low levels of information asymmetry. CE is significant only when information asymmetry is high. DIFF1 is statistically significant, indicating that GAAP earnings have incremental value relevance in relation to CORE, CE and CF in Model 1, when information asymmetry is high. The results for DIFF1 and DIFF2, in relation to CORE and CE, however, show differences between Model 1 and Model 2.

Table 5.4: Ohlson Model: Financial Sector Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low Information Asymmetry Index Quintiles

Model 1: $P_{it} = \alpha_{o} + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_{o} + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	IA Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.943***	12.727*	-4.874	13.798***	880	0.7611
	High	1.472***	6.794*	-8.049	3.282	693	0.9299
CORE	Low	1.323***	6.511	-2.469	10.060***	859	0.7725
	High	1.535***	2.960	25.131***	3.196	709	0.9322
CE	Low	1.332***	1.770	-14.317*	9.720***	887	0.7664
	High	0.916***	15.910***	9.752**	8.455***	724	0.8911
CF	Low	0.870***	9.120	9.013	17.583***	894	0.6348
	High	1.358***	11.692*	10.954*	4.667*	733	0.8964

Panel B: Pre-GFC - Model 2

	IA Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.939***	12.924*	-3.634	13.896***	880	0.7601
	High	1.460***	7.100*	-5.954	3.226	693	0.9294
CORE	Low	1.322***	6.511	0.330	9.983***	859	0.7724
	High	1.610***	0.192	12.535	4.392	709	0.9171
CE	Low	1.343***	1.616	-15.104*	9.927***	887	0.7661
	High	1.051***	12.188***	7.407	8.370***	724	0.8861
CF	Low	0.839***	9.936*	9.796*	17.475***	894	0.6373
	High	1.362***	11.290*	10.562*	4.852*	733	0.8959

Panel C: GFC - Model 1

	IA Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.118	36.635**	8.024*	18.395***	247	0.6403
	High	1.044***	0.009	0.670	4.842	219	0.9329
CORE	Low	0.321	27.280**	7.905	20.667***	255	0.5938
	High	1.030***	0.054	0.229	4.542	216	0.9336
CE	Low	0.427	24.270	-1.331	15.540***	247	0.5785
	High	1.002***	0.094	-3.560*	5.613*	216	0.9325
CF	Low	0.552***	4.004	3.376*	25.927***	261	0.3476
	High	1.045***	-0.029	0.279	5.906*	211	0.9458

Panel D: GFC - Model 2

	IA Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.113	37.078**	9.091*	17.977***	247	0.6429
	High	1.073***	0.014	1.435**	4.533	219	0.9341
CORE	Low	0.319	27.570**	9.660	20.111***	255	0.5962
	High	1.060***	0.091	1.097***	4.007	216	0.9342
CE	Low	0.425	24.371	-0.645	15.636***	247	0.5784
	High	1.031***	0.196	-0.582	5.139*	216	0.9309
CF	Low	0.543***	4.526	3.892*	25.744***	261	0.3489
	High	1.051***	0.041	0.352	5.890*	211	0.9460

Panel E: Post-GFC - Model 1

	IA Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.872***	4.369	-4.023	13.577***	891	0.7426
	High	0.720***	4.593**	3.792***	7.314***	489	0.8230
CORE	Low	0.921***	2.374	-4.074	13.574***	892	0.7444
	High	0.711***	4.659***	3.925***	7.654***	489	0.7994
CE	Low	0.966***	-0.718	-3.880	12.281***	883	0.7633
	High	0.520***	4.239***	3.066***	11.268***	451	0.7643
CF	Low	0.900***	1.415	1.070	13.861***	884	0.7722
	High	0.518***	2.935***	3.249***	11.656***	466	0.5000

Panel F: Post-GFC - Model 2

	IA Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.870***	4.612	-4.061*	13.601***	891	0.7429
	High	0.714***	4.348**	3.405***	7.142***	489	0.8129
CORE	Low	0.918***	2.666	-4.232	13.598***	892	0.7448
	High	0.704***	4.436***	3.354	7.564***	489	0.7888
CE	Low	0.968***	-0.585	-4.436	12.200***	883	0.7638
	High	0.395***	2.910***	0.706	13.743***	451	0.7381
CF	Low	0.900***	1.435	1.092	13.854***	884	0.7722
	High	0.528***	2.911***	3.324***	11.278***	466	0.5025

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. IA quintile is Low if the information asymmetry index (IAI) quintile is 1 and High if the IAI quintile is 5.

GAAP earnings are significant when information asymmetry is high in Model 1 but is not significant in Model 2. In relation to CF, GAAP earnings are not significant when information asymmetry is low in Model 1 but is significant in Model 2. Also, both DIFF1 and DIFF2 are weakly significant and negative in relation to CE when information asymmetry is low.

Panels C and D present the results for the GFC period. There is some evidence of a shift in investors' focus in this period. GAAP earnings, in relation to IBES, are statistically significant and have incremental value relevance at low level of information asymmetry in the GFC period. This is in contrast to the previous period where DIFF1 is not statistically significant. The results also indicate that GAAP earnings have incremental value relevance in relation to CF at a low level of information asymmetry. On the other hand, DIFF1 is significant and negative in relation to CE and DIFF2 is significant and positive in relation to CORE at a high level of information asymmetry.

The results for the post-GFC period are presented in Panels E and F. For both Model 1 and Model 2, all non-GAAP earnings are statistically significant when information asymmetry is high. Additionally, in Panel E, there is evidence that when information asymmetry is high, GAAP earnings are incrementally value relevant; DIFF1 is strongly significant is relation to all non-GAAP earnings. In Panels E and F, DIFF1 and DIFF2 are not significant when information asymmetry is low except for DIFF2 in relation to IBES. Interestingly, the sign of the statistically significant DIFF2 is negative when information asymmetry is low. When information asymmetry is high, however, all statistically significant DIFF1 and DIFF2 are positive.

The results generally indicate an asymmetric emphasis on GAAP earnings by investors in relation to IBES, CORE and CE in the pre- and post-GFC periods. That is, DIFF1 and DIFF2 are negative when information asymmetry is low and are positive when information asymmetry is high. Recall that DIFF1 and DIFF2 are computed as GAAP earnings less non-GAAP earnings, therefore, negative values of DIFF1 and DIFF2 indicate GAAP earnings, which are generally closer to, or less than, non-GAAP earnings. Investors may view the incremental value relevance of GAAP earnings differently subject to the level of information asymmetry. An explanation is that when information asymmetry is low, investors place greater emphasis on GAAP earnings, which are generally closer to, or less than non-GAAP earnings, i.e., negatively significant DIFF1 or DIFF2. On the other hand, when information asymmetry is high, GAAP earnings are incrementally value relevant notwithstanding the comparatively higher values of GAAP earnings, as evidenced by the positive sign on DIFF1 and DIFF2. These results are consistent with investors finding GAAP earnings incrementally value relevant because of the credibility and reliability of GAAP earnings.

Also, recall that DIFF1 is measured using GAAP earnings from operations adjusted to exclude special items. Therefore, this GAAP earnings measure is more closely aligned with IBES and CORE, and these three earnings measures are argued to better reflect recurring earnings. Consequently, DIFF1 biases the results against finding significance in incremental value relevance of GAAP earnings in relation to IBES and CORE.

I find similar results with Model 2 for IBES and CF but not for CORE and CE. The results for Model 2 in Panel F show DIFF2 is statistically significant and positive in relation to IBES and CF when information asymmetry is high. DIFF2 is not statistically significant in relation to CORE and CE.

The results generally show that investors primarily focus on the book value of net assets when valuing financial firms across all sub-periods. However, during the GFC, the IBES and CORE models show that investors are focused on earnings when information asymmetry is low.

5.2.2 Non-Financial Sector Sample

5.2.2.1 Model Estimation with Main Effects and Interaction Terms

Table 5.5 shows the estimation results of the non-financial sector sample for models with main effects and interaction terms. All models are statistically significant.

In the pre-GFC period, BV is strongly significant across all models, however, non-GAAP earnings and IA are generally not statistically significant. GAAP earnings (Model 2) have incremental value relevance only in relation to CORE and CE. IA*BV is not significant for all alternative earnings measures. IA*NonGAAPE is marginally to moderately significant and negative in relation to IBES, CORE and CE. IA*DIFF is marginally significant and negative in relation to CORE, CE and CF. These results show that investors place strong emphasis on the book value of net assets. Nevertheless, when information asymmetry is high, IBES, CORE and CE are value relevant, but the negative sign indicates these earnings have a negative impact on share price. GAAP earnings are also incrementally value relevant in relation to CORE, CE and CF when information asymmetry is high. However, the negative sign and the magnitude of the interaction terms of non-GAAP and GAAP earnings indicate that investors price down the firm when information asymmetry is high.

During the GFC, investors continued to place strong emphasis on the book value of net assets. The results also show that investors placed comparatively greater emphasis on GAAP and non-GAAP earnings during the GFC relative to the pre-GFC period. IBES is strongly significant and positive but CORE, CE and CF are marginally to moderately significant and negative. GAAP earnings are moderately to strongly significant and generally negative in relation to IBES (Models 1 and 2), CE (Model 1) and CF (Model 1), but it is positive in relation to CORE (Model 2). IA is generally not statistically significant.

Table 5.5: Ohlson Model: Non-Financial Sector Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with Information Asymmetry Index Dummy and Interaction Terms as Controls

$$\text{Model 1: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 IA_{it} + \beta_5 IA*BV_{it} + \beta_6 IA*NonGAAPE_{it} + \beta_7 IA*DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 IA_{it} + \beta_5 IA*BV_{it} + \beta_6 IA*NonGAAPE_{it} + \beta_7 IA*DIFF2_{it} + \varepsilon_{it}$$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	2.107***	2.151***	2.118***	2.228***	2.446***	2.619***	2.384***	2.388***
	(5.45)	(5.74)	(7.79)	(7.53)	(7.04)	(7.17)	(8.01)	(8.06)
NonGAAPE	7.328	7.125	3.764	2.447	3.688	4.511	2.012	2.153
	(0.96)	(0.93)	(0.69)	(0.44)	(0.68)	(0.95)	(0.45)	(0.52)
DIFF	-4.293	-1.553	37.724	13.976**	8.818	18.018*	2.678	2.839
	(-0.95)	(-0.43)	(1.93)	(2.73)	(1.16)	(2.05)	(0.56)	(0.68)
IA	7.055*	5.185	6.658	4.881	5.707	3.153	7.552	5.896
	(2.05)	(1.53)	(1.87)	(1.32)	(1.39)	(0.74)	(1.91)	(1.39)
IA*BV	-0.482	-0.287	-0.488	-0.630	-0.432	-0.434	-0.647	-0.543
	(-1.21)	(-0.69)	(-1.58)	(-1.66)	(-0.99)	(-0.75)	(-1.63)	(-1.22)
IA*NonGAAPE	-17.102*	-16.713*	-15.440**	-10.668	-14.345*	-9.713	-11.208	-6.872
	(-2.36)	(-2.16)	(-2.68)	(-1.85)	(-2.38)	(-1.81)	(-1.90)	(-1.31)
IA*DIFF	-11.914	-7.528	-46.436*	-3.745	-20.072*	-21.830*	-12.954*	-8.944
	(-1.96)	(-1.70)	(-2.33)	(-0.57)	(-2.41)	(-2.11)	(-2.24)	(-1.81)
Intercept	2.741	2.313	2.228	2.838	1.496	1.721	1.899	1.887
	(0.83)	(0.74)	(0.66)	(0.86)	(0.42)	(0.53)	(0.57)	(0.59)
N	13283	13283	13170	13170	12226	12226	13104	13104
Adj R^2	0.6784	0.6673	0.6704	0.6625	0.6728	0.6714	0.6788	0.6730
BIC	124180	124632	123693	124007	115069	115122	123489	123725
BIC Rank	7	8	4	6	1	2	3	5

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.403***	1.449***	1.726***	1.679***	1.546***	1.645***	1.703***	1.710***
	(9.93)	(8.47)	(10.51)	(13.04)	(14.98)	(11.31)	(10.48)	(10.36)
NonGAAPE	12.413***	11.070***	-1.717*	-1.905**	-2.407**	-1.711	-1.762*	-1.281
	(4.57)	(4.55)	(-2.38)	(-2.80)	(-3.08)	(-1.83)	(-2.38)	(-1.22)
DIFF	-5.233***	-3.971***	-7.048	5.574**	-4.415**	2.686	-1.827**	-1.228
	(-14.68)	(-4.10)	(-1.39)	(2.59)	(-2.72)	(0.56)	(-2.71)	(-1.14)
IA	-3.521	-2.938	-5.093	-6.081*	1.780	1.714	-0.065	0.564
	(-1.09)	(-1.00)	(-1.77)	(-2.17)	(1.74)	(1.84)	(-0.03)	(0.22)
IA*BV	0.163	0.111	-0.146	-0.121	-0.861***	-0.901***	-0.759**	-0.625*
	(0.61)	(0.43)	(-0.52)	(-0.47)	(-8.35)	(-5.93)	(-3.20)	(-2.37)
IA*NonGAAPE	-15.809*	-13.780*	-1.559	-0.423	7.748***	4.209***	11.506**	6.163**
	(-2.22)	(-2.49)	(-0.31)	(-0.09)	(3.73)	(3.45)	(3.02)	(2.77)
IA*DIFF	2.053	6.060***	-1.337	-3.312	8.431**	-2.332	10.478**	4.689**
	(0.47)	(5.24)	(-0.23)	(-1.30)	(3.27)	(-0.44)	(2.88)	(2.90)
Intercept	8.197	7.993	9.893	10.240	10.793***	10.930***	9.807***	9.546***
	(.)	(.)	(.)	(.)	(12.26)	(12.53)	(23.63)	(31.88)
N	3310	3310	3299	3299	3210	3210	3336	3336
Adj R^2	0.6611	0.6501	0.6367	0.6362	0.5676	0.5587	0.6434	0.6338
BIC	30184	30290	30397	30402	28563	28629	30271	30360
BIC Rank	3	5	7	8	1	2	4	6

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.168***	1.251***	1.170***	1.234***	1.258***	1.505***	1.202***	1.401***
	(3.45)	(3.78)	(3.48)	(3.92)	(3.81)	(5.08)	(3.82)	(4.52)
NonGAAPE	35.142***	32.156***	35.148***	33.235***	32.160***	26.041***	31.877***	25.018***
	(6.76)	(5.60)	(6.57)	(6.31)	(5.32)	(4.25)	(6.15)	(4.84)
DIFF	21.320*	13.655	25.223***	-11.238***	35.312***	37.372***	32.217***	24.634***
	(2.17)	(1.66)	(3.96)	(-3.53)	(3.37)	(4.31)	(6.25)	(4.70)
IA	7.318*	6.728	7.277*	7.473*	6.418*	3.900	6.372*	5.732
	(2.11)	(1.90)	(2.18)	(2.23)	(2.36)	(1.93)	(2.11)	(1.83)
IA*BV	-0.443	-0.515	-0.421	-0.381	-0.522	-0.696*	-0.469	-0.530
	(-1.24)	(-1.48)	(-1.21)	(-1.16)	(-1.48)	(-2.18)	(-1.41)	(-1.64)
IA*NonGAAPE	-24.410***	-21.739***	-26.342***	-30.242***	-22.208***	-23.038***	-22.167***	-22.435***
	(-4.18)	(-3.46)	(-4.87)	(-5.24)	(-3.33)	(-3.51)	(-3.65)	(-3.78)
IA*DIFF	-17.872	-13.753	-14.307*	12.962***	-26.042*	-39.474***	-21.990***	-21.648***
	(-1.84)	(-1.65)	(-2.05)	(3.96)	(-2.38)	(-4.36)	(-3.58)	(-3.62)
Intercept	4.721	5.155	4.969	5.400	5.980**	7.946***	5.785*	6.918*
	(1.49)	(1.59)	(1.61)	(1.76)	(2.58)	(4.71)	(2.06)	(2.40)
N	7434	7434	7341	7341	7035	7035	7623	7623
Adj R^2	0.6903	0.6805	0.6839	0.6747	0.7001	0.6840	0.7048	0.6744
BIC	68149	68380	67241	67452	64890	65257	69781	70526
BIC Rank	5	6	3	4	1	2	7	8

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. IA = 1 if the information asymmetry index (IAI) quintile is 5 and 0 if the IAI quintile is 1. IA*BV = Interaction term of IAI with book value of common equity per share. IA*NonGAAPE = Interaction term of IAI with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. IA*DIFF = Interaction term of IAI with the corresponding DIFF measure of DIFF1 and DIFF2.

The results of the main effects show some evidence that investors place greater emphasis on GAAP earnings that are generally closer to, or less than, non-GAAP earnings, i.e., the negative sign of the relevant coefficients, when information asymmetry is low. The results of the interaction terms show that IA*BV is statistically significant and negative in relation to CE and CF. IA*NonGAAPE is marginally significant and negative in relation to IBES but moderately to strongly significant in relation to CE and CF. IA*DIFF is moderately significant and positive in relation to IBES, CE and CF. Generally, the results show that non-GAAP earnings are value relevant when information asymmetry is high, but a negative sign indicates that investors reduce the emphasis they place on these earnings. Conversely, GAAP earnings are incrementally value relevant when information asymmetry is high and investors increase their emphasis on these earnings.

In the post-GFC period, there is an observable shift in investors' emphasis on earnings. While investors maintain a strong emphasis on the book value of net assets, IBES, CORE, CE and CF are all strongly significant and positive, which is in contrast to the pre-GFC period. Also, non-GAAP earnings are generally incrementally value relevant in relation to all alternative earnings measures.

In contrast to the main effects, the interaction terms for GAAP and non-GAAP earnings are statistically significant and negative for all alternative earnings measures, except GAAP earnings in relation to IBES (not statistically significant) and CORE Model 2 (statistically significant but positive). Generally, these results show that high information asymmetry has a negative impact on the emphasis investors place on earnings. Using BIC to assess model performance, the CE models perform best across the three period windows.

5.2.2.2 Model Estimation by Low and High Information Asymmetry

Table 5.6 shows the results for the non-financial sector sample. Panel A shows all non-GAAP earnings are statistically significant at the high level of information asymmetry. However, the sign of these coefficients is negative. This suggests that investors find lower values of non-GAAP earnings value relevant at higher levels of information asymmetry. Additionally, DIFF1 is significant and negative in relation to all non-GAAP earnings at the high level of information asymmetry. The finding of negative and significant DIFF1 indicates that investors find GAAP earnings, which are generally closer to, or less than, non-GAAP earnings incrementally value relevant. Overall, for Model 2 in Panel B, the results for IBES, CORE and CE are generally similar to Model 1. However, DIFF2 is significant in relation to CORE and not significant in relation to CF for both low and high levels of information asymmetry. Also, DIFF2 is significant in relation to CE when information asymmetry is low but not when it is high.

Generally, the results provide evidence that investors focus predominantly on book values of net assets at the low level of information asymmetry in the pre-GFC period. At the high level of information asymmetry, however, investors appear to focus more strongly on non-GAAP earnings. Additionally, the evidence also shows that at a high level of information asymmetry, GAAP earnings are incrementally value relevant.

In the GFC period, IBES and CORE are statistically significant only at a low level of information asymmetry for both Model 1 and Model 2. CE and CF, however, are significant at both low and high levels of information asymmetry in Model 1 but significant only at a high level of information asymmetry in Model 2. DIFF1 is significant at both low and high levels of information asymmetry in relation to CE and CF, but only significant at a low level of information asymmetry in relation to IBES.

DIFF2 is significant at both low and high levels of information asymmetry in relation to IBES, but is significant at a low level of information asymmetry in relation to CORE and significant at a high level of information asymmetry in relation to CF. Notably, the sign of significant DIFF1 and DIFF2 is negative when information asymmetry is low and positive when information asymmetry is high. The only exception is DIFF2 in relation to CORE, which is positive when information asymmetry is low. The results show that GAAP earnings generally have incremental value relevance in relation to non-GAAP earnings.

Interestingly, the results for IBES and CORE indicate that these non-GAAP earnings are value relevant at the low level of information asymmetry but not when information asymmetry is high. When information asymmetry is high, the results show that investors find CE and CF significantly value relevant, indicating investors place greater emphasis on cash flows during the GFC.

There is a marked contrast in the results the post-GFC period relative to the pre-GFC period. Panel E shows all non-GAAP earnings and DIFF1 are strongly significant and positive at both levels of information asymmetry except for DIFF1 in relation to IBES, which is marginally significant. In comparison, all non-GAAP earnings and DIFF1 are only significant and negative when information asymmetry is high in the pre-GFC period.

In Panel F, IBES is strongly significant and positive at both levels of information asymmetry but CORE, CE and CF are strongly significant and positive only at the low level of information asymmetry. In contrast, IBES, CORE and CE are significant and negative when information asymmetry is high in the pre-GFC period. DIFF2 is not significant in relation to IBES in the post-GFC period but is significant and negative when information asymmetry is high in the pre-GFC period.

Table 5.6: Ohlson Model: Non-Financial Sector Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low Information Asymmetry Index Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	IA Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	2.107***	7.328	-4.293	2.741	8254	0.6416
	High	1.625***	-9.774*	-16.207***	9.796***	5029	0.7473
CORE	Low	2.118***	3.764	37.724	2.228	8174	0.6238
	High	1.630***	-11.676***	-8.712**	8.886***	4996	0.7483
CE	Low	2.446***	3.688	8.818	1.496	7754	0.6224
	High	2.015***	-10.657***	-11.254**	7.203**	4472	0.7776
CF	Low	2.384***	2.012	2.678	1.899	8199	0.6570
	High	1.737***	-9.197*	-10.276**	9.452***	4905	0.7242

Panel B: Pre-GFC - Model 2

	IA Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	2.151***	7.125	-1.553	2.313	8254	0.6390
	High	1.864***	-9.588*	-9.082*	7.498***	5029	0.7194
CORE	Low	2.228***	2.447	13.976**	2.838	8174	0.6144
	High	1.598***	-8.221**	10.231**	7.718***	4996	0.7429
CE	Low	2.619***	4.511	18.018*	1.721	7754	0.6402
	High	2.186***	-5.202*	-3.812	4.874	4472	0.7354
CF	Low	2.388***	2.153	2.839	1.887	8199	0.6583
	High	1.844***	-4.719	-6.105	7.783*	4905	0.7021

Panel C: GFC - Model 1

	IA Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.403***	12.413***	-5.233***	8.197	2082	0.7440
	High	1.567***	-3.396	-3.180	4.676	1228	0.4272
CORE	Low	1.726***	-1.717*	-7.048	9.893	2077	0.7044
	High	1.580***	-3.276	-8.385	4.800	1222	0.4360
CE	Low	1.546***	-2.407**	-4.415**	10.793***	2033	0.6090
	High	0.685***	5.341**	4.015*	12.573***	1177	0.3427
CF	Low	1.703***	-1.762*	-1.827**	9.807***	2118	0.6908
	High	0.944***	9.744*	8.651*	9.742***	1218	0.4352

Panel D: GFC - Model 2

	IA Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.449***	11.070***	-3.971***	7.993	2082	0.7285
	High	1.560***	-2.709	2.089**	5.055	1228	0.4284
CORE	Low	1.679***	-1.905**	5.574**	10.240	2077	0.7067
	High	1.558***	-2.328	2.262	4.158	1222	0.4271
CE	Low	1.645***	-1.711	2.686	10.930***	2033	0.6027
	High	0.744***	2.498***	0.354	12.644***	1177	0.3204
CF	Low	1.710***	-1.281	-1.228	9.546***	2118	0.6860
	High	1.086***	4.882*	3.461***	10.110***	1218	0.4055

Panel E: Post-GFC - Model 1

	IA Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.168***	35.142***	21.320*	4.721	4665	0.7180
	High	0.725***	10.732***	3.448*	12.039***	2769	0.4022
CORE	Low	1.170***	35.148***	25.223***	4.969	4629	0.7125
	High	0.750***	8.806***	10.916***	12.246***	2712	0.3670
CE	Low	1.258***	32.160***	35.312***	5.980**	4452	0.7285
	High	0.736***	9.952***	9.269***	12.397***	2583	0.4050
CF	Low	1.202***	31.877***	32.217***	5.785*	4790	0.7327
	High	0.734***	9.710***	10.226***	12.157***	2833	0.3741

Panel F: Post-GFC - Model 2

	IA Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.251***	32.156***	13.655	5.155	4665	0.7074
	High	0.736***	10.417***	-0.098	11.883***	2769	0.3983
CORE	Low	1.234***	33.235***	-11.238***	5.400	4629	0.7090
	High	0.853***	2.993	1.724**	12.873***	2712	0.3012
CE	Low	1.505***	26.041***	37.372***	7.946***	4452	0.7162
	High	0.809***	3.003	-2.103	11.845***	2583	0.3505
CF	Low	1.401***	25.018***	24.634***	6.918*	4790	0.7060
	High	0.871***	2.583	2.985	12.650***	2833	0.3011

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. IA quintile is Low if the information asymmetry index (IAI) quintile is 1 and High if the IAI quintile is 5.

Also, DIFF2 is significant in relation to CE and CF when information asymmetry is low in the post-GFC period, but it is significant only in relation to CE when information asymmetry is low in the pre-GFC period. While DIFF2 is significant and positive in relation to CORE at both levels of information asymmetry in the pre-GFC period, there is a change in sign when information asymmetry is low in the post-GFC period.

These results indicate that investors place comparatively greater emphasis on earnings in the post-GFC period relative to the pre-GFC period. Interestingly, the sign of NonGAAPE is positive when information asymmetry is high in the post-GFC period, which is in contrast to the pre-GFC period. It suggests that investors are seeking information from alternative sources and they find this information positively associated with share price. Conversely, GAAP earnings remain statistically significant when information asymmetry is high in relation to IBES and CORE. Notably, however, IBES is strongly significant in the post-GFC period when information asymmetry is high but only marginally significant in the pre-GFC period. This result shows investors turning their focus back to IBES after the peak of the GFC.

However, the results also show a shift in investors' focus in relation to GAAP earnings when information asymmetry is low in the post-GFC period; DIFF1 is statistically significant in relation to all non-GAAP earnings. In comparison, Panel A show DIFF1 is statistically significant only at the high level of information asymmetry. In Panel F, the results for Model 2 show CE, CF and DIFF2 are statistically significant when information asymmetry is low, which is in contrast to Panel B.

Generally, the results for non-financial firms show a shift in the emphasis investors place on GAAP earnings. During the GFC, investors shift their focus to GAAP earnings at the low level of information asymmetry, while this focus is generally absent for the corresponding level of information asymmetry in the pre-GFC period. Additionally, GAAP earnings remain incrementally value relevant in relation to CE and CF during the GFC when information asymmetry is high. After the GFC, GAAP earnings, particularly DIFF1, continue to remain incrementally value relevant.

5.2.3 S&P 500 Sample

5.2.3.1 Model Estimation with Main Effects and Interaction Terms

Table 5.7 shows the estimation results of the S&P 500 sample for models with main effects and interaction terms. All models are statistically significant.

In the pre-GFC period, BV, IBES, CORE, CE and CF are statistically significant and positive across all models. GAAP earnings are incrementally value relevant only in relation to CE and CF. IA is marginally to moderately significant and positive in relation to IBES, CORE and CE, but not significant in relation to CF. As this sample comprises large firms, it generally implies that these firms have more analysts following and higher levels of publicly available information, i.e., the firms are relatively homogeneous in respect to information set by virtue of size. Therefore, IA may be sensitive to small variations. This may explain the positive sign in statistically significant IA.

IA*BV is not statistically significant across all models. However, the interaction terms for GAAP and non-GAAP earnings are generally statistically significant and negative in relation to CORE, CE and CF. These results show that when information asymmetry is high, GAAP earnings are incrementally value relevant but investors reduce their emphasis on GAAP earnings in comparison to when information asymmetry is low.

Table 5.7: Ohlson Model: S&P 500 Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with Information Asymmetry Index Dummy and Interaction Terms as Controls

$$\text{Model 1: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 IA_{it} + \beta_5 IA * BV_{it} + \beta_6 IA * NonGAAPE_{it} + \beta_7 IA * DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 IA_{it} + \beta_5 IA * BV_{it} + \beta_6 IA * NonGAAPE_{it} + \beta_7 IA * DIFF2_{it} + \varepsilon_{it}$$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.954***	0.954***	1.187***	1.171***	1.190***	1.225***	0.948***	1.075***
	(3.31)	(3.31)	(4.97)	(4.80)	(7.32)	(8.28)	(4.84)	(7.09)
NonGAAPE	24.391**	24.530**	20.986***	21.543***	19.822**	19.042***	21.146***	18.077***
	(3.13)	(3.17)	(3.61)	(3.70)	(4.26)	(4.55)	(3.65)	(4.54)
DIFF	2.182	4.391	-10.934	-3.897	26.721**	27.021***	21.291***	18.193***
	(0.49)	(1.19)	(-1.46)	(-0.66)	(3.50)	(4.01)	(3.62)	(4.52)
IA	4.194*	3.986*	4.521	6.396**	4.768*	5.072*	3.753	4.217
	(2.33)	(2.10)	(1.88)	(2.71)	(2.09)	(2.51)	(1.51)	(1.77)
IA*BV	-0.300	-0.307	-0.415	-0.207	-0.229	-0.181	-0.067	-0.122
	(-0.85)	(-0.86)	(-1.28)	(-0.68)	(-0.84)	(-0.69)	(-0.26)	(-0.52)
IA*NonGAAPE	-9.447	-9.188	-10.818	-20.293***	-11.802	-18.341***	-15.788*	-16.418***
	(-1.21)	(-1.16)	(-1.62)	(-3.86)	(-1.93)	(-4.62)	(-2.46)	(-3.81)
IA*DIFF	-2.987	-5.357	22.096**	8.978	-17.209*	-29.595***	-15.711*	-16.348***
	(-0.73)	(-1.47)	(2.70)	(1.43)	(-2.11)	(-4.13)	(-2.35)	(-3.69)
Intercept	12.724***	12.682***	12.628***	12.174***	12.513**	13.113***	14.634***	15.004***
	(8.72)	(8.68)	(7.35)	(6.78)	(7.67)	(8.07)	(7.54)	(7.70)
N	3142	3142	3110	3110	2909	2909	3099	3099
Adj R^2	0.8940	0.8944	0.8985	0.8943	0.9048	0.9034	0.8489	0.8417
BIC	28024	28011	27486	27606	26310	26346	27475	27619
BIC Rank	8	7	4	5	1	2	3	6

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.981***	0.995***	1.262***	1.329***	1.068***	1.007***	1.271***	1.354***
	(4.30)	(4.10)	(11.74)	(13.90)	(6.21)	(9.14)	(10.41)	(9.90)
NonGAAPE	20.661**	21.019***	7.210	6.834	6.252	5.885*	7.420	6.712*
	(3.28)	(3.46)	(1.60)	(1.79)	(1.87)	(2.29)	(1.83)	(2.48)
DIFF	1.000	2.041	5.015	6.271	-0.773	-6.920	7.047	6.331*
	(0.92)	(1.36)	(0.87)	(1.30)	(-0.20)	(-1.63)	(1.71)	(2.26)
IA	3.555	3.725	0.441	-2.760	-3.980	-3.385	-3.957	-1.443
	(0.59)	(0.61)	(0.07)	(-0.47)	(-0.73)	(-0.64)	(-0.63)	(-0.24)
IA*BV	0.068	0.096	-0.444**	-0.319*	-0.034	0.064	-0.137	-0.270
	(0.21)	(0.29)	(-3.06)	(-2.06)	(-0.15)	(0.36)	(-0.76)	(-1.67)
IA*NonGAAPE	-18.272**	-18.951**	-6.329	-6.003	-5.230	-4.582	-4.662	-4.597
	(-2.79)	(-3.00)	(-1.30)	(-1.42)	(-1.46)	(-1.90)	(-1.08)	(-1.53)
IA*DIFF	-0.805	-0.831	-8.476	-5.721	0.490	8.062*	-3.189	-3.177
	(-0.55)	(-0.56)	(-1.51)	(-1.13)	(0.10)	(2.02)	(-0.71)	(-1.01)
Intercept	14.243	13.942***	20.761***	20.085***	22.365***	21.678***	20.194***	19.526***
	(.)	(18.88)	(9.18)	(7.57)	(6.63)	(6.97)	(6.83)	(5.50)
N	801	801	782	782	760	760	809	809
Adj R^2	0.7739	0.7753	0.7827	0.7830	0.8287	0.8318	0.7667	0.7666
BIC	7430	7418	7276	7281	7124	7096	7519	7519
BIC Rank	6	5	3	4	2	1	7	7

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.133	0.133	0.345	0.366	0.383	0.419	0.328	0.379*
	(0.89)	(0.90)	(1.78)	(1.95)	(1.75)	(1.84)	(1.70)	(2.05)
NonGAAPE	53.309***	53.342***	42.850***	41.943***	43.032***	40.645***	39.290***	36.966***
	(7.71)	(7.68)	(4.47)	(4.42)	(4.23)	(4.13)	(4.59)	(4.50)
DIFF	1.447	2.576	21.995*	9.440	46.424**	42.511**	38.738***	35.933***
	(0.53)	(1.03)	(2.52)	(1.55)	(3.08)	(2.91)	(4.52)	(4.46)
IA	8.113	9.353	1.992	4.069	2.848	4.405	-0.365	0.027
	(1.52)	(1.77)	(0.35)	(0.69)	(0.51)	(0.80)	(-0.07)	(0.01)
IA*BV	0.625***	0.513**	0.418*	0.287	0.080	0.274	0.320	0.436*
	(3.60)	(2.84)	(2.03)	(1.32)	(0.34)	(1.05)	(1.41)	(2.00)
IA*NonGAAPE	-44.068***	-42.778***	-34.448***	-33.638***	-26.428**	-34.753***	-25.760**	-30.979***
	(-6.28)	(-6.05)	(-3.71)	(-3.46)	(-2.61)	(-3.59)	(-3.06)	(-3.76)
IA*DIFF	4.433	0.530	-15.907	-7.378	-32.210*	-38.914**	-24.944**	-29.787***
	(1.18)	(0.16)	(-1.95)	(-1.25)	(-2.14)	(-2.63)	(-2.97)	(-3.69)
Intercept	10.114*	10.226*	17.230***	17.892***	16.691***	18.475***	18.431***	20.260***
	(2.38)	(2.42)	(3.75)	(3.98)	(3.55)	(4.33)	(4.21)	(5.15)
N	2065	2065	2030	2030	1996	1996	2142	2142
Adj R^2	0.5657	0.5648	0.4912	0.4827	0.4855	0.4603	0.4958	0.4710
BIC	19841	19838	20022	20063	19791	19886	20746	20849
BIC Rank	3	2	5	6	1	4	7	8

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. IA = 1 if the information asymmetry index (IAI) quintile is 5 and 0 if the IAI quintile is 1. IA*BV = Interaction term of IAI with book value of common equity per share. IA*NonGAAPE = Interaction term of IAI with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. IA*DIFF = Interaction term of IAI with the corresponding DIFF measure of DIFF1 and DIFF2.

During the GFC, BV is strongly significant across all models. IBES is statistically significant in both Model 1 and Model 2, however, CE and CF are only statistically significant in Model 2. GAAP earnings and IA are generally not statistically significant. These results of the main effects show investors maintaining their focus on the book value of net assets, but placing less emphasis on earnings during the GFC. IA and all the interaction terms are generally not statistically significant.

The exception is IA*NonGAAPE in relation to IBES (moderately significant and negative), and IA*DIFF (marginally significant and positive) in relation to CE. Generally the level of information asymmetry has little marginal impact on the emphasis investors place on GAAP and non-GAAP earnings during the GFC.

In the post-GFC period, there is an observable shift in investors' emphasis on BV and non-GAAP earnings. BV is generally not statistically significant but all non-GAAP earnings are strongly significant across all models. GAAP earnings are moderately to strongly significant in relation to CE and CF. IA is not statistically significant for all models. These results show that in the post-GFC period investors placed greater emphasis on earnings than on the book value of net assets. Furthermore, the interaction term, IA*NonGAAPE, is moderately to strongly significant and negative for all models. This indicates high information asymmetry has a negative marginal impact on investors' emphasis on non-GAAP earnings. IA*DIFF, however, are only statistically significant and negative in relation to CE and CF. GAAP earnings appear to be incrementally value relevant when information asymmetry is high. Additionally, the negative sign shows that investors appear to place less emphasis on GAAP earnings relative to when information asymmetry is high.

5.2.3.2 Model Estimation by Low and High Information Asymmetry

The results for the S&P 500 sample are presented in Table 5.8. Panel A shows all non-GAAP earnings are statistically significant at both levels of information asymmetry except for CF when information asymmetry is low. DIFF1 is statistically significant in relation to CORE when information asymmetry is high and is statistically significant in relation to CF when information asymmetry is low. Also, DIFF1 is statistically significant in relation to CE at both levels of information asymmetry.

The results for IBES and CF for Model 2 in Panel B are generally similar to Panel A. However, DIFF2 is significant and negative at the high level of information asymmetry in relation to IBES and is significant and positive in relation to CF at the low level of information asymmetry. CORE and CE are statistically significant only when information asymmetry is low. DIFF2 is also statistically significant in relation to CE only when information asymmetry is low.

In the GFC period, Panel C shows only IBES and CF are statistically significant when information asymmetry is low and high, respectively. Also, DIFF1 is only significant in relation to CF when information asymmetry is high. In Panel D, IBES and CE are significant when information asymmetry is low, however, CF is significant at both levels of information asymmetry. DIFF2 is significant only in relation to CF at both low and high levels of information asymmetry.

Table 5.8: Ohlson Model: S&P 500 Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low Information Asymmetry Index Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	IA Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.954***	24.391**	2.182	12.724***	1963	0.9116
	High	0.654**	14.944***	-0.805	16.918***	1179	0.4305
CORE	Low	1.187***	20.986***	-10.934	12.628***	1951	0.9177
	High	0.772***	10.169**	11.162***	17.148***	1159	0.3971
CE	Low	1.190***	19.822***	26.721***	12.513***	1827	0.9211
	High	0.962***	8.019*	9.512**	17.281***	1082	0.4071
CF	Low	0.948***	21.146***	21.291***	14.634***	1943	0.8816
	High	0.881***	5.358	5.581	18.387***	1156	0.3256

Panel B: Pre-GFC - Model 2

	IA Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.954***	24.530**	4.391	12.682***	1963	0.9119
	High	0.647**	15.342***	-0.966*	16.668***	1179	0.4354
CORE	Low	1.171***	21.543***	-3.897	12.174***	1951	0.9171
	High	0.964***	1.250	5.081	18.570***	1159	0.3060
CE	Low	1.225***	19.042***	27.021***	13.113***	1827	0.9218
	High	1.044***	0.701	-2.574	18.185***	1082	0.3439
CF	Low	1.075***	18.077***	18.193***	15.004***	1943	0.8762
	High	0.953***	1.659	1.845	19.221***	1156	0.2908

Panel C: GFC - Model 1

	IA Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.981***	20.661**	1.000	14.243	514	0.7694
	High	1.049***	2.389	0.196	17.798***	287	0.7762
CORE	Low	1.262***	7.210	5.015	20.761***	500	0.7641
	High	0.818***	0.882	-3.462	21.202***	282	0.8053
CE	Low	1.068***	6.252	-0.773	22.365***	491	0.8384
	High	1.034***	1.022	-0.284	18.384***	269	0.8031
CF	Low	1.271***	7.420	7.047	20.194***	524	0.7244
	High	1.135***	2.758*	3.857**	16.237***	285	0.8209

Panel D: GFC - Model 2

	IA Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.995***	21.019***	2.041	13.942***	514	0.7709
	High	1.091***	2.068	1.210	17.667***	287	0.7775
CORE	Low	1.329***	6.834	6.271	20.085***	500	0.7664
	High	1.011***	0.832	0.550	17.325***	282	0.8023
CE	Low	1.007***	5.885*	-6.920	21.678***	491	0.8427
	High	1.071***	1.304	1.141	18.292***	269	0.8036
CF	Low	1.354***	6.712*	6.331*	19.526***	524	0.7237
	High	1.084***	2.115*	3.154**	18.082***	285	0.8214

Panel E: Post-GFC - Model 1

	IA Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.133	53.309***	1.447	10.114*	1319	0.5984
	High	0.758***	9.242***	5.880***	18.227***	746	0.3365
CORE	Low	0.345	42.850***	21.995*	17.230***	1306	0.5063
	High	0.763***	8.401***	6.088***	19.221***	724	0.3255
CE	Low	0.383	43.032***	46.424**	16.691***	1286	0.4977
	High	0.463***	16.605***	14.214***	19.539***	710	0.3833
CF	Low	0.328	39.290***	38.738***	18.431***	1353	0.5072
	High	0.648***	13.530***	13.793***	18.065***	789	0.4007

Panel F: Post-GFC - Model 2

	IA Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.133	53.342***	2.576	10.226*	1319	0.5988
	High	0.647***	10.564***	3.106***	19.579***	746	0.3278
CORE	Low	0.366	41.943***	9.440	17.892***	1306	0.5008
	High	0.653***	8.304***	2.062**	21.961***	724	0.2966
CE	Low	0.419	40.645***	42.511**	18.475***	1286	0.4843
	High	0.694***	5.892**	3.597	22.880***	710	0.2820
CF	Low	0.379*	36.966***	35.933***	20.260***	1353	0.4919
	High	0.814***	5.987*	6.146*	20.288***	789	0.3304

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. IA quintile is Low if the information asymmetry index (IAI) quintile is 1 and High if the IAI quintile is 5.

The results for the post-GFC period are in strong contrast to the results for the pre-GFC and GFC periods. All non-GAAP earnings are strongly significant at both low and high levels of information asymmetry in Model 1 (Panel E) and Model 2 (Panel F) except for CF, which is marginally significant when information asymmetry is high in Model 2.

The results show that DIFF1, in Panel E, is incrementally value relevant at both levels of information asymmetry in relation to all non-GAAP earnings except IBES when information asymmetry is low. DIFF2 is significant in relation to IBES, CORE and CF when information asymmetry is high and it is also significant in relation to CE and CF when information asymmetry is low.

There is some evidence of a shift in investors' focus between the pre- and post-GFC periods. DIFF1 is strongly significant when information asymmetry is high in relation to IBES in the post-GFC period (Panel E) but is not significant in the pre-GFC period (Panel A). Also, DIFF1 and DIFF2 are statistically significant at both levels of information asymmetry in relation to CF in the post-GFC period, but are generally only statistically significant when information asymmetry is low in the pre-GFC period. The results for CE are generally similar between the pre- and post-GFC periods. It is notable that BV is not significant when information asymmetry is low, in relation to all non-GAAP earnings for both Model 1 and Model 2. It appears that investors find the non-GAAP earnings for large firms relatively more value relevant when information asymmetry is low.

5.2.4 Non-S&P 500 Sample

5.2.4.1 Model Estimation with Main Effects and Interaction Terms

Table 5.9 shows the estimation results of the non-S&P 500 sample for models with main effects and interaction terms. All models are statistically significant.

In the pre-GFC period, BV is strongly significant across all models. All non-GAAP earnings and IA are not significant. GAAP earnings are incrementally value relevant only in relation to CORE. IA*NonGAAPE is generally statistically significant and negative. However, IA*DIFF is statistically significant and negative only in relation to CORE and CF. The results show investors focus predominantly on the book value of net assets. However, when information asymmetry is high, investors decrease their emphasis on non-GAAP earnings. There is some evidence that GAAP earnings are incrementally value relevant.

During the GFC, there is evidence of a shift in investors' focus on accounting numbers. In comparison to the pre-GFC period, investors appear to be more focused on earnings. CORE, CE and CF are statistically significant. Furthermore, GAAP earnings generally have incremental value relevance over non-GAAP earnings and the statistically significant coefficients are generally negative. This also indicates that investors placed greater emphasis on values of GAAP earnings, which are generally closer to, or less than, non-GAAP earnings. IA is generally not statistically significant. The results for the interaction terms show that GAAP and non-GAAP earnings are value relevant only in relation to CE and CF when information asymmetry is high. Interestingly, these statistically significant coefficients are positive, indicating that investors place increased emphasis on these earnings when information asymmetry is high.

Table 5.9: Ohlson Model: Non-S&P 500 Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with Information Asymmetry Index Dummy and Interaction Terms as Controls

$$\text{Model 1: } P_{it} = \alpha_{it} + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 IA_{it} + \beta_5 IA*BV_{it} + \beta_6 IA*NonGAAPE_{it} + \beta_7 IA*DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_{it} + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 IA_{it} + \beta_5 IA*BV_{it} + \beta_6 IA*NonGAAPE_{it} + \beta_7 IA*DIFF2_{it} + \varepsilon_{it}$$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.270***	1.270***	1.153***	1.195***	1.169***	1.170***	1.395***	1.392***
	(3.76)	(3.71)	(3.32)	(3.58)	(3.38)	(3.41)	(3.52)	(3.49)
NonGAAPE	12.095	12.249*	8.700	7.866	8.045	8.116	4.580	4.559
	(1.94)	(1.99)	(1.29)	(1.17)	(1.11)	(1.17)	(0.75)	(0.77)
DIFF	-3.622	-2.635	33.842*	29.982*	0.463	0.989	4.236	4.192
	(-0.58)	(-0.51)	(2.27)	(2.01)	(0.05)	(0.10)	(0.73)	(0.76)
IA	2.346	1.653	0.108	0.162	0.901	-0.349	2.928	2.076
	(0.60)	(0.43)	(0.03)	(0.04)	(0.23)	(-0.08)	(0.59)	(0.42)
IA*BV	0.239	0.268	0.250	0.170	0.385	0.437	-0.120	-0.095
	(0.54)	(0.61)	(0.66)	(0.46)	(0.90)	(0.90)	(-0.25)	(-0.20)
IA*NonGAAPE	-21.902**	-21.255**	-17.784**	-16.566*	-17.035*	-14.427	-17.460**	-16.071**
	(-3.25)	(-3.09)	(-2.58)	(-2.49)	(-2.18)	(-1.86)	(-2.75)	(-2.69)
IA*DIFF	-8.530	-7.417	-33.121*	-21.706	-9.176	-7.491	-16.926**	-15.570**
	(-0.96)	(-1.00)	(-2.20)	(-1.44)	(-0.86)	(-0.68)	(-2.91)	(-2.85)
Intercept	7.565*	7.498*	9.080*	9.103*	8.843*	8.897*	8.865*	8.938*
	(2.20)	(2.17)	(2.38)	(2.50)	(2.47)	(2.44)	(2.01)	(2.06)
N	12907	12907	12874	12874	12316	12316	12797	12797
Adj R^2	0.6357	0.6327	0.6140	0.6173	0.5938	0.5891	0.5891	0.5885
BIC	123232	123350	123168	123057	118404	118548	124144	124164
BIC Rank	5	6	4	3	1	2	7	8

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.994***	1.018***	1.077***	1.086***	1.114***	1.122***	1.071***	1.080***
	(6.81)	(6.84)	(7.02)	(7.16)	(8.13)	(8.08)	(12.02)	(11.70)
NonGAAPE	6.393	6.034	-3.994***	-3.969***	-3.288*	-2.971*	-3.675*	-3.328*
	(1.35)	(1.40)	(-3.69)	(-3.73)	(-2.36)	(-1.97)	(-2.47)	(-2.16)
DIFF	-4.931*	-4.320*	1.403	2.695**	-7.873**	-8.625	-3.526*	-3.084*
	(-2.29)	(-2.11)	(1.51)	(3.21)	(-2.83)	(-1.73)	(-2.56)	(-2.04)
IA	-7.395	-6.833	-9.031	-9.208	-2.595	-1.582	-5.558*	-5.103
	(-1.47)	(-1.37)	(-1.63)	(-1.61)	(-1.33)	(-0.81)	(-2.00)	(-1.79)
IA*BV	0.412	0.408	0.292	0.276	-0.295	-0.299	-0.146	-0.098
	(0.83)	(0.84)	(0.62)	(0.60)	(-1.70)	(-1.70)	(-0.72)	(-0.43)
IA*NonGAAPE	-8.766	-8.513	2.515	2.793	5.543**	4.967**	10.642**	8.097**
	(-1.05)	(-1.15)	(0.58)	(0.68)	(2.70)	(2.79)	(2.74)	(2.85)
IA*DIFF	5.178	7.004**	-6.089	-0.683	8.781*	10.504	8.684**	5.926**
	(1.69)	(2.85)	(-1.13)	(-0.39)	(2.54)	(1.91)	(2.79)	(3.18)
Intercept	11.955***	11.690***	13.824***	13.732***	12.378***	11.881***	13.970***	13.719***
	(7.72)	(7.39)	(5.65)	(5.65)	(6.98)	(6.61)	(8.06)	(8.07)
N	3359	3359	3341	3341	3284	3284	3402	3402
Adj R^2	0.6067	0.6026	0.5760	0.5779	0.6247	0.6194	0.6264	0.6182
BIC	31058	31093	30684	30661	29449	29496	30411	30485
BIC Rank	7	8	6	5	1	2	3	4

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.997***	0.987***	1.056***	1.062***	1.093***	1.132***	1.073***	1.109***
	(3.90)	(3.93)	(4.02)	(4.12)	(4.53)	(4.66)	(4.48)	(4.50)
NonGAAPE	19.429***	19.998***	15.101***	15.307***	12.853**	11.173**	11.956**	10.348***
	(4.09)	(4.18)	(3.90)	(4.01)	(2.99)	(3.17)	(3.06)	(3.46)
DIFF	-8.052	-7.864*	-3.436	-6.605	1.782	-5.030	11.608**	9.907**
	(-1.90)	(-2.24)	(-0.70)	(-1.64)	(0.36)	(-1.26)	(2.70)	(2.84)
IA	1.837	1.858	2.167	2.610	3.732	3.894	1.193	0.928
	(0.50)	(0.51)	(0.55)	(0.70)	(0.92)	(0.94)	(0.29)	(0.22)
IA*BV	-0.165	-0.139	-0.337	-0.318	-0.301	-0.344	-0.342	-0.306
	(-0.61)	(-0.53)	(-1.18)	(-1.19)	(-1.13)	(-1.28)	(-1.28)	(-1.10)
IA*NonGAAPE	-12.917*	-14.200**	-9.761*	-12.784**	-6.383	-8.627*	-6.438	-8.571**
	(-2.50)	(-2.80)	(-2.43)	(-3.10)	(-1.37)	(-2.29)	(-1.51)	(-2.67)
IA*DIFF	9.896*	7.885*	9.175	9.541**	3.922	2.435	-5.299	-7.304
	(2.21)	(2.12)	(1.68)	(2.60)	(0.73)	(0.52)	(-1.10)	(-1.92)
Intercept	8.032*	7.887*	9.252*	9.121*	7.007	6.076	9.746*	9.897**
	(2.26)	(2.23)	(2.56)	(2.53)	(1.87)	(1.60)	(2.56)	(2.60)
N	7271	7271	7247	7247	7087	7087	7347	7347
Adj R^2	0.7120	0.7124	0.6863	0.6860	0.6814	0.6800	0.6860	0.6814
BIC	65337	65328	65506	65514	64998	65030	67659	67767
BIC Rank	4	3	5	6	1	2	7	8

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. IA = 1 if the information asymmetry index (IAI) quintile is 5 and 0 if the IAI quintile is 1. IA*BV = Interaction term of IAI with book value of common equity per share. IA*NonGAAPE = Interaction term of IAI with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. IA*DIFF = Interaction term of IAI with the corresponding DIFF measure of DIFF1 and DIFF2.

The results for the post-GFC period show an observable shift in investors' focus in comparison to the pre-GFC period. In the post-GFC period, BV and all non-GAAP earnings are statistically significant, which is in contrast to the pre-GFC period where non-GAAP earnings not statistically significant. There is some evidence that GAAP earnings have incremental value relevance. DIFF1 and DIFF2 are statistically significant in relation to IBES and CF. IA is not statistically significant. IA*NonGAAPE is generally statistically significant and negative, which indicate that the marginal effect of high information asymmetry on non-GAAP earnings is negatively associated with share price. There is some evidence that GAAP earnings are incrementally value relevant in relation to IBES and CORE.

5.2.4.2 Models by Low and High Information Asymmetry

Table 5.10 presents the results for the non-S&P 500 sample. All non-GAAP earnings are statistically significant at the higher level of information asymmetry for both Model 1 (Panel A) and Model 2 (Panel B) in the pre-GFC period. In Model 1, GAAP earnings are incrementally value relevant at the higher level of information asymmetry in relation to IBES, CE and CF. In contrast, GAAP earnings are only incrementally value relevant when information asymmetry is low in relation to CORE. I find similar results for Model 2 (Panel B) in relation to IBES, CORE and CF. However, DIFF2 is not statistically significant in relation to CE across all quintiles.

My results for the non-S&P 500 sample for the pre-GFC period are similar to those for the non-financial sample. Non-GAAP earnings, DIFF1 and DIFF2 are generally significant and negative at the high level of information asymmetry.

Also, DIFF1 and DIFF2 are significant and positive in relation to CORE at the low level of information asymmetry. The significant and negative results for DIFF1 and DIFF2 suggest that for small firms, investors find GAAP earnings that are generally closer to, or less than, non-GAAP earnings incrementally value relevant.

In the GFC period, IBES is not significant and CORE is significant and negative when information asymmetry is low in both Model 1 (Panel C) and Model 2 (Panel D). Also, CE and CF are both significant and negative when information asymmetry is low and significant and positive when information asymmetry is high in Model 1 and Model 2.

The results also show an inverse relationship for DIFF1 and DIFF2 at low and high levels of information asymmetry. DIFF1 is significant and negative when information asymmetry is low in relation to IBES, CE and CF. However, it is significant and positive when information asymmetry is high in relation to CF. DIFF2 is significant and negative in relation to IBES and CF when information asymmetry is low but it is significant and positive when information asymmetry is high. However, DIFF2 is significant and positive in relation to CORE when information asymmetry is low.

Table 5.10: Ohlson Model: Non-S&P 500 Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low Information Asymmetry Index Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	IA Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.270***	12.095	-3.622	7.565*	8057	0.6171
	High	1.508***	-9.807*	-12.151*	9.911***	4850	0.6918
CORE	Low	1.153***	8.700	33.842*	9.080*	8024	0.5760
	High	1.404***	-9.084***	0.721	9.188***	4850	0.7217
CE	Low	1.169***	8.045	0.463	8.843*	7806	0.5680
	High	1.555***	-8.990**	-8.713**	9.743***	4510	0.7075
CF	Low	1.395***	4.580	4.236	8.865*	8021	0.5671
	High	1.275***	-12.880***	-12.690***	11.793***	4776	0.6806

Panel B: Pre-GFC - Model 2

	IA Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.270***	12.249*	-2.635	7.498*	8057	0.6163
	High	1.538***	-9.007	-10.052	9.152***	4850	0.6804
CORE	Low	1.195***	7.866	29.982*	9.103*	8024	0.5783
	High	1.365***	-8.700***	8.275	9.265***	4850	0.7284
CE	Low	1.170***	8.116	0.989	8.897*	7806	0.5681
	High	1.607***	-6.311*	-6.501	8.548***	4510	0.6774
CF	Low	1.392***	4.559	4.192	8.938*	8021	0.5676
	High	1.297***	-11.512**	-11.378***	11.014***	4776	0.6742

Panel C: GFC - Model 1

	IA Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.994***	6.393	-4.931*	11.955***	2106	0.6795
	High	1.406**	-2.373	0.247	4.559	1253	0.3285
CORE	Low	1.077***	-3.994***	1.403	13.824***	2084	0.6555
	High	1.369**	-1.480	-4.686	4.794	1257	0.3239
CE	Low	1.114***	-3.288*	-7.873**	12.378***	2065	0.6490
	High	0.819***	2.255*	0.909	9.783***	1219	0.4231
CF	Low	1.071***	-3.675*	-3.526*	13.970***	2146	0.6568
	High	0.925***	6.967*	5.158*	8.412***	1256	0.4752

Panel D: GFC - Model 2

	IA Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.018***	6.034	-4.320*	11.690***	2106	0.6714
	High	1.426**	-2.479	2.684***	4.856	1253	0.3383
CORE	Low	1.086***	-3.969***	2.695**	13.732***	2084	0.6584
	High	1.362**	-1.175	2.012	4.524	1257	0.3225
CE	Low	1.122***	-2.971*	-8.625	11.881***	2065	0.6426
	High	0.822***	1.995***	1.879	10.299***	1219	0.4241
CF	Low	1.080***	-3.328*	-3.084*	13.719***	2146	0.6493
	High	0.983***	4.768*	2.843***	8.617***	1256	0.4636

Panel E: Post-GFC - Model 1

	IA Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.997***	19.429***	-8.052	8.032*	4579	0.7277
	High	0.831***	6.513***	1.844*	9.869***	2692	0.5581
CORE	Low	1.056***	15.101***	-3.436	9.252*	4579	0.7079
	High	0.719***	5.340***	5.739*	11.419***	2668	0.4437
CE	Low	1.093***	12.853**	1.782	7.007	4513	0.7021
	High	0.792***	6.470***	5.704***	10.740***	2574	0.4042
CF	Low	1.073***	11.956**	11.608**	9.746*	4650	0.6974
	High	0.731***	5.518***	6.308***	10.939***	2697	0.5204

Panel F: Post-GFC - Model 2

	IA Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.987***	19.998***	-7.864*	7.887*	4579	0.7285
	High	0.847***	5.798***	0.021	9.745***	2692	0.5547
CORE	Low	1.062***	15.307***	-6.605	9.121*	4579	0.7102
	High	0.744***	2.523	2.937*	11.731***	2668	0.4181
CE	Low	1.132***	11.173**	-5.030	6.076	4513	0.7031
	High	0.788***	2.546	-2.595	9.970***	2574	0.3739
CF	Low	1.109***	10.348***	9.907**	9.897**	4650	0.6950
	High	0.803***	1.777	2.603	10.826***	2697	0.4913

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. IA quintile is Low if the information asymmetry index (IAI) quintile is 1 and High if the IAI quintile is 5.

In the post-GFC period, the results show a shift in investors' emphasis on non-GAAP earnings. Panel E shows that all non-GAAP earnings are statistically significant at both levels of information asymmetry. GAAP earnings have incremental value relevance only when information asymmetry is high in relation to all non-GAAP earnings. In Panel F, all non-GAAP earnings are statistically significant when information asymmetry is low. Additionally, IBES is also significant when information asymmetry is high. DIFF2, however, is only significant in relation to IBES and CF when information asymmetry is low and significant in relation to CORE when information asymmetry is high.

5.3 DISCUSSION

I use two alternative approaches to investigate the impact of information asymmetry. These two approaches yield complementary and consistent findings. Generally, estimating the models with the main effects and interaction terms show the impact of information asymmetry on the pooled sample. However, separately estimating the models for firms with low information asymmetry and firms with high information asymmetry provides a contrast of the value relevance of the alternative earnings measures for each of these sub-samples.

My results indicate that information asymmetry has an impact on the value relevance of GAAP and non-GAAP earnings. The GAAP earnings measure used in each model also has an impact on the results. Recall that DIFF1 is measured using GAAP earnings from operations adjusted to exclude special items. Therefore, this GAAP earnings measure is more closely aligned with IBES and CORE, and these three earnings measures are argued to better reflect recurring earnings. Consequently, DIFF1 biases the results against finding significance in incremental value relevance of GAAP earnings in relation to IBES and CORE.

A comparison of Chapter 3 Table 3.3 with Table 5.1 and Chapter 3 Table 3.4 with Table 5.2 highlights the impact of information asymmetry on the results. Table 5.1 shows that CE and CF models generally outperform all other models tested across all samples after controlling for the main effects and interaction terms of information asymmetry. This is in marked contrast with the results reported in Table 3.3, which show that IBES models are generally the best performers. Table 5.2 highlights additional and complementary insight into the impact of information asymmetry. Specifically, it shows that the value relevance of non-GAAP earnings and the incremental value relevance of GAAP earnings are subject to the level of information asymmetry. This is most evident in the results of: the financial sector sample in the pre- and post-GFC periods; the non-financial sector sample in the pre-GFC and GFC periods; the S&P 500 sample in the GFC period; and the non-S&P 500 sample in all periods.

In the financial sector sample, my results show that information asymmetry impacts on the emphasis investors place on both GAAP and non-GAAP earnings. My results show a shift in investors' focus towards GAAP earnings between the pre- and post-GFC periods, particularly when the level of information asymmetry is high. I find the interaction of DIFF1 is marginally to moderately significant in relation to IBES, CORE and CE. However, in the results from separately estimating the models for firms with low or high information asymmetry, I find DIFF1 is strongly significant, indicating investors find it incrementally value relevant, relative to all non-GAAP earnings when information asymmetry is high in the post-GFC period; the comparative results pre-GFC is weaker. An explanation for the weaker results in the model with main effects and interactions terms is that the sample is pooled, which averages out the effects of information asymmetry.

I also find that the level of statistical significance for both DIFF1 and DIFF2 is generally higher in the post-GFC period relative to the pre-GFC period. I find similar results for DIFF2 in relation to IBES and CF but not in relation to CORE and CE. These results also suggest that investors generally find the GAAP1 earnings measure more value relevant than the GAAP2 earnings measure. In the GFC period, I find a general increase in investors' focus on GAAP earnings, however, the results do not indicate a consistent focus on GAAP earnings at specific levels of information asymmetry.[22]

In comparison to the results for the financial sector sample in Chapter 3, I find that the level of information asymmetry impacts on the results. In the post-GFC period, the pooled sample results show no, or marginal, statistical significance for GAAP earnings in relation to IBES and CORE. However, I present evidence in this chapter that shows that GAAP earnings have statistically significant incremental value relevance when the level of information asymmetry is high. Furthermore, the best performing models after controlling for information asymmetry are in contrast to those in Chapter 3. My results for the financial sector sample are consistent with investors placing greater emphasis on GAAP earnings, which are relatively more credible and reliable than non-GAAP earnings in the wake of the GFC, and that GAAP earnings are incrementally value relevant.

The results of the models with main effects and interaction terms for firms not in the financial sector show interesting contrasts. While there is evidence of a shift in investors' focus to GAAP earnings post-GFC, it appears the more significant shift in focus relates to non-GAAP earnings. While there are few differences between the results from the two alternative estimation approaches, the substantial findings are consistent and remain the same. In the pre-GFC period, both non-GAAP and GAAP earnings are generally not value relevant at low level of information asymmetry. I observe statistical significance generally when information asymmetry is high and that it has a negative impact on the emphasis investors place on these earnings. In the post-GFC period, however, non-GAAP earnings are strongly significant at low level of information asymmetry in all models. Non-GAAP earnings are strongly significant, but

[22] I re-estimate my models in the GFC window clustering on a single dimension - by time and by firm. While there are few individual differences in the results across all samples, the substance of the inferences and interpretations discussed in this chapter remain the same.

negative, when information asymmetry is high in all models. These results show a shift in investors' emphasis between the pre-GFC and post-GFC periods when information asymmetry is low. Nevertheless, in both instances, investors appear to reduce their emphasis on non-GAAP earnings when information asymmetry is high. The results for GAAP earnings show they generally have incremental value relevance when the level of information.

During the GFC, there is some evidence of a shift in investors' focus on accounting numbers. In comparison to the pre-GFC period, investors appear to generally be more focused on earnings. CORE, CE and CF are statistically significant. Furthermore, GAAP earnings generally have incremental value relevance over non-GAAP earnings and the statistically significant coefficients are generally negative at the low level of information asymmetry. This also indicates that investors place greater emphasis on values of GAAP earnings, which are generally closer to, or less than, non-GAAP earnings.

More interesting is the apparent inverse relationship between information asymmetry and GAAP and non-GAAP earnings when the models are estimated separately for firms with high or low information asymmetry. In the pre-GFC period, I observe an inverse relationship between higher levels of information asymmetry and both GAAP and non-GAAP earnings. In the post-GFC period, however, there is a positive relationship between a high level of information asymmetry and both GAAP and non-GAAP earnings. In addition, in the post-GFC period, at a low level of information asymmetry, significant coefficients of non-GAAP and GAAP earnings are positive. These results for the post-GFC period are consistent with investors finding GAAP earnings to be more credible and reliable and to have incremental value relevance.

The results for model performance based on BIC show a contrast to the results in Chapter 3. The CE models are the best performing models across the three period windows, however, IBES models perform best in the estimation results in Chapter 3.

In the S&P 500 sample, the results from the models with main effects and interactions terms show an observable shift in investors' focus between the pre-GFC period and the post-GFC period. Investors appear to place greater emphasis on earnings in the post-GFC period, however, they appear to place greater emphasis on the book value of net assets in the pre-GFC period. There is some evidence that GAAP earnings are incrementally value relevant in relation to CE and CF.

In the results from separately estimating the models for firms with high or low information asymmetry, the post-GFC results for Model 1 show investors find GAAP earnings incrementally value relevant across all levels of information asymmetry, except in relation to IBES where GAAP earnings are incrementally value relevant only when information asymmetry is high. While the results for Model 2 are weaker, there is still evidence of a shift in investors' focus. Interestingly, CF, which is not statistically significant in the pre-GFC period when information asymmetry is high, becomes marginally significant in the GFC period when information asymmetry is high. This is consistent with the GFC causing investors to place more focus on cash flows.

The results for the non-S&P 500 sample show non-GAAP earnings are generally value relevant when information asymmetry is high in the pre-GFC period. There is also some evidence that GAAP earnings are incrementally value relevant. This evidence, however, is clearer and stronger in the results from separately estimating the model for firms with high or low information asymmetry. GAAP earnings are generally incrementally value relevant when information asymmetry is high in relation to IBES, CE and CF. In contrast, GAAP earnings are incrementally value relevant in relation to CORE only when information asymmetry is low.

I also find an inverse relationship between relatively high levels of information asymmetry and both non-GAAP and GAAP earnings. Similar to the non-financial sample, the results suggests that when information asymmetry is high, investors find more conservative earnings more value relevant.

Post-GFC, however, non-GAAP earnings are generally value relevant across all levels of information asymmetry in Model 1 and when information asymmetry is low to moderate in Model 2. Non-GAAP earnings are incrementally value relevant generally when information asymmetry is high. Interestingly, when information asymmetry is high in the GFC period, IBES and CORE are not statistically significant but CE and CF are statistically significant. Additionally, GAAP earnings are incrementally value relevant in relation to CF in this period. These results suggest that investors are focused on cash and cash-based earnings in the GFC in respect to smaller firms.

Furthermore, the change from an inverse relationship between high information asymmetry and GAAP earnings in the pre-GFC period to a direct relationship in the post-GFC period is consistent with investors finding GAAP earnings more credible and more value relevant.

5.4 SUMMARY AND CONCLUSIONS

My results for the Ohlson models presented in Chapter 3 show mixed evidence of the comparative value relevance of non-GAAP earnings and the incremental value relevance of GAAP earnings. I expect investors to shift their focus to GAAP earnings during and after the GFC. I report mixed results in Chapter 3 that show a shift in investors' focus on GAAP and non-GAAP earnings before, during and after the GFC. In summary, the results in Chapter 3 provide some support for prior studies that find non-GAAP earnings to be value relevant. They also show that GAAP earnings are incrementally value relevant. However, these results are weak and are not consistent across all samples and are subject to the measure of GAAP earnings used, particularly in the non-financial and non-S&P 500 samples.

In this chapter, I address *RQ2* and investigate whether levels of information asymmetry explain my mixed findings in Chapter 3. Specifically, I investigate how different levels of information asymmetry impact on my results and, at extreme levels of information asymmetry, if there is a change in the value relevance of non-GAAP and GAAP earnings between the three sub-periods in my study. Prior studies on the value relevance of GAAP versus non-GAAP earnings (Albring *et al.*, 2010; Bradshaw and Sloan, 2002; Brown and Sivakumar, 2003) do not control for or investigate the impact of information asymmetry on the results.

In this chapter, I find evidence of a shift in investors' focus on GAAP and non-GAAP earnings conditioned by the level of information asymmetry. Investors place greater emphasis on GAAP earnings, when information asymmetry is high, in the post-GFC period in comparison to the pre-GFC period. The results are also consistent with the argument that investors may seek more credible and reliable information in the wake of the GFC. The results from the pre-GFC period show that investors value relatively more conservative earnings when information asymmetry is high. In the post-GFC period, however, I find that GAAP earnings are incrementally value relevant and positive when information asymmetry is high. Furthermore, the evidence of a negative relationship between a low level of information asymmetry and earnings, and a positive relationship between a high level of information asymmetry and earnings in the non-financial sector and non-S&P 500 samples explain the weak and mixed results in Chapter 3. Specifically, in the aggregated samples in Chapter 3, these positive and negative relationships will biased against finding significant results in the GAAP and non-GAAP earnings measures.

Furthermore, there is evidence that investors also place greater overall emphasis on non-GAAP and GAAP earnings in the post-GFC period relative to the pre-GFC period. This is consistent across all samples in this study. The results are generally stronger for Model 1 relative to Model 2. Given that the GAAP1 earnings measure is argued to be more comparable to both IBES and CORE, an essential difference between GAAP and non-GAAP earnings is that the former complies with mandated rules. While quarterly earnings are not typically audited, their compliance with GAAP suggests greater credibility and reliability. Therefore, the results I present are consistent with investors shifting their focus to earnings that are more credible and reliable as a consequence of the GFC.

Finally, the results show an impact on model performance. In contrast to Chapter 3, my results in this chapter show that CE consistently outperform IBES in three of the four samples, which are the non-financial sector, S&P 500 and non-S&P 500 samples. This is in stark contrast to the results of the prior studies noted above and highlights the impact of information asymmetry on the emphasis investors place on both GAAP and non-GAAP earnings. My results suggest that investors are more focused on cash-based earnings in the presence of high information asymmetry.

CHAPTER 6

EARNINGS QUALITY

6.1 INTRODUCTION

In this chapter, I investigate the impact of earnings quality on the value relevance of GAAP and non-GAAP earnings to address *RQ3*. I examine if the level of earnings quality is systematically associated with the emphasis investors place on the value relevance of GAAP and non-GAAP earnings. I also examine if the GFC may have had an impact on the value relevance of these earnings.

My results in Chapters 3 and 5 show that the GFC has an impact on the value relevance of GAAP and non-GAAP earnings. Furthermore, I find that investors place greater emphasis on GAAP and non-GAAP earnings after the GFC, particularly in the financial sector, non-financial sector and S&P 500 samples. I also find evidence of a change in investors' emphasis to more credible and reliable earnings, i.e., GAAP earnings. My examination of the impact of information symmetry, in Chapter 5, indicates that the emphasis investors place on GAAP and non-GAAP earnings is fluid. My results are also consistent with prior studies showing the market prices information risk, consistent with poor earnings quality.

In this chapter, I further examine the impact of earnings quality and the GFC on the value relevance of my alternative earnings measure. Specifically, I adopt a returns-based measure of earnings quality that captures investors' perceptions of their exposure to poor earning quality from Ecker *et al*. (2006), who refer to this measure as e-loading. Ecker *et al*. (2006) show two alternative methods of calculating e-loading – a one-factor e-loading and a three-factor e-loading. I apply and test both methods of calculating e-loadings. For brevity, I report the one-factor e-loading method in this chapter.[23]

Consistent with Chapter 5, I adopt two alternative approaches to investigate the impact of earnings quality. I focus on the extreme quintiles of e-loading, as systematic differences are more likely to be evident in firms with extreme levels of exposure to low

[23] There are few differences between the results from the one-factor e-loading and three-factor e-loading models estimations. These differences may be explained by the inclusion of size and value in estimating the three-factor e-loading. The three-factor e-loading may be a noisy measure in the sample of large firms. Nevertheless, the inferences from the one-factor e-loading and three-factor e-loading results are substantially similar.

quality earnings. The first approach examines the main effects and interaction terms in the model. I include a dummy variable, EL, where 1 indicates firms with high e-loading (i.e., high exposure to low quality earnings) and 0 indicates firms with low e-loading (i.e., low exposure to low quality earnings). Additionally, the interpretation of the coefficients is different due to including interaction terms in the model. In summary, the coefficients of the main effects reflect their impact when EL equals 0. The coefficients of the interaction terms measure the marginal effect of that variable when EL equals 1, i.e., a positive (negative) coefficient indicates the increased (decreased) effect of that variable. Therefore, the unique effect of a test variable is the sum of the coefficients of the main effect and its interaction term.

In the second approach, I assign firms into quintiles based on e-loading. I re-estimate my Ohlson models separately for firms in the high or low quintiles of e-loading for each sample in my study.

Also, consistent with prior chapters, references to the value relevance of non-GAAP earnings denote comparative value relevance between these earnings, i.e., IBES, CORE, CE and CF, and references to DIFF1, DIFF2 and GAAP earnings denote incremental value relevance between GAAP and non-GAAP earnings.

In summary, I expect investors to discount the share price of firms with high exposure to low quality earnings, That is, I expect to find a negative association between share price and GAAP and non-GAAP earnings when the level of exposure to low quality earnings is high. On the other hand, when the exposure to low quality earnings is low, I expect GAAP earnings to be value relevant. Nevertheless, the type of sample may be biased against finding significant results. For example, firms in the S&P 500 index will generally have a relatively lower risk of exposure to low quality earnings in comparison to firms not in the S&P 500 index. Therefore, sorting large firms into quintiles based on e-loading means that the relative level of exposure to low quality earnings will be small in comparison to firms not in the S&P 500 index. Consequently, this may bias against finding significant results in the test variables. Similarly, firms in the financial sector are generally more highly regulated. Furthermore, this sample is relatively more homogeneous in comparison to the other samples. This may also bias against finding significant results in the test variables.

My results show that the GFC has an impact that results in a shift in investors' focus on GAAP and non-GAAP earnings. Furthermore, I find evidence that low quality earnings are discounted by investors. Generally, earnings quality has an impact on the value relevance of non-GAAP earnings and the incremental value relevance of GAAP earnings.

Table 6.1 presents a summary of the two highest ranked models, with main effects and interaction terms, for all samples and periods that I test in this chapter. It shows that in the pre- and post-GFC periods, IBES models generally outperform all other models. However, during the GFC, CF models perform best. The results are consistent with the argument that in a period of uncertainty, investors are concerned with cash flows.

Table 6.1: Summary of Two Highest Ranked Models for All Samples with e-loading and Interaction Terms
(Comparison of Model Performance using BIC)

Model 1: $P_{it} = \alpha_{0} + \beta_{1}BV_{it} + \beta_{2}NonGAAPE_{it} + \beta_{3}DIFF1_{it} + \beta_{4}EL_{it} + \beta_{5}EL*BV_{it} + \beta_{6}EL*NonGAAPE_{it} + \beta_{7}EL*DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_{0} + \beta_{1}BV_{it} + \beta_{2}NonGAAPE_{it} + \beta_{3}DIFF2_{it} + \beta_{4}EL_{it} + \beta_{5}EL*BV_{it} + \beta_{6}EL*NonGAAPE_{it} + \beta_{7}EL*DIFF2_{it} + \varepsilon_{it}$

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Financial								
- Pre-GFC	2 (49)	1 (17)						
- GFC							1 (3)	2 (14)
- Post-GFC	1 (2)	2 (3)						
Non-Financial								
- Pre-GFC	1 (163)						2 (263)	
- GFC	2 (8)						1 (65)	
- Post-GFC	2 (1,129)	1 (22)						
S&P 500								
- Pre-GFC	1 (33)	2 (278)						
- GFC							1 (58)	1 (58)
- Post-GFC	1 (25)	2 (369)						
Non-S&P 500								
- Pre-GFC	1 (365)			2 (114)				
- GFC							1 (2)	1 (2)
- Post-GFC	2 (503)	1 (41)						

Models ranked 1 and 2 by their BIC are shown. The absolute difference in BIC values between the model and the next lower ranked model is shown in parentheses. The different grades of evidence corresponding to minimum BIC difference according to Raftery (1995) are:

Minimum BIC Difference of 0: Weak
Minimum BIC Difference of 2: Positive
Minimum BIC Difference of 6: Strong
Minimum BIC Difference of 10: Very Strong

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. EL = 1 if e-loading quintile is 5 and 0 if e-loading quintile is 1. EL*BV = Interaction term of e-loading with book value of common equity per share. EL*NonGAAPE = Interaction term of e-loading with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. EL*DIFF = Interaction term of e-loading with the corresponding DIFF measure of DIFF1 and DIFF2.

Table 6.2 presents a summary of my Ohlson model regressions for each sample by period windows, models and low and high quintiles of exposure to low quality earnings. This table highlights the key variables that are statistically significant at p = 0.05 or stronger. The negative sign of significant variables are indicated in brackets. The results show that investors are predominantly focused on the book value of equity. In the financial sector and S&P 500 samples, there is evidence of investors placing relatively greater emphasis on GAAP and non-GAAP earnings in the post-GFC period in comparison to the pre-GFC period. On the other hand, the results show a shift in investors' emphasis away from GAAP and non-GAAP earnings in the post-GFC period in comparison to the pre-GFC period.

Table 6.2: Summary of Significant Key Variables for Multivariate OLS Regression Results by Sample, Models and High/Low e-loading Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Financial Sector Sample

Pre-GFC

		Model 1			Model 2		
	EL Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		
	High	sig	sig		sig	sig	
CORE	Low	sig		sig (-)	sig		
	High	sig	sig		sig	sig	
CE	Low	sig			sig		
	High	sig	sig		sig	sig	
CF	Low	sig			sig		
	High	sig	sig	sig	sig	sig	sig

GFC

		Model 1			Model 2		
	EL Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		
	High	sig	sig		sig	sig	
CORE	Low	sig			sig		
	High	sig	sig	sig	sig	sig	
CE	Low	sig		sig (-)	sig		
	High	sig	sig		sig	sig	sig
CF	Low	sig			sig		
	High	sig	sig	sig	sig	sig	sig

Post-GFC

		Model 1			Model 2		
	EL Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	
	High	sig	sig		sig	sig	
CORE	Low	sig	sig		sig	sig	sig
	High	sig	sig		sig	sig	
CE	Low	sig	sig		sig	sig	sig
	High	sig		sig	sig		
CF	Low	sig	sig	sig	sig	sig	sig
	High	sig			sig		

Panel B: Non-Financial Sector Sample

Pre-GFC

		Model 1			Model 2		
	EL Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		
	High	sig		sig (-)	sig	sig (-)	
CORE	Low	sig			sig		sig
	High	sig	sig (-)	sig (-)	sig	sig (-)	
CE	Low	sig			sig		
	High	sig	sig (-)	sig (-)	sig	sig (-)	
CF	Low	sig			sig		
	High	sig	sig (-)	sig (-)	sig	sig (-)	sig (-)

GFC

		Model 1			Model 2		
	EL Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	sig
	High	sig		sig (-)	sig		
CORE	Low	sig	sig	sig	sig	sig	
	High	sig	sig (-)		sig	sig (-)	sig
CE	Low	sig	sig	sig	sig	sig	
	High	sig	sig (-)		sig	sig (-)	
CF	Low	sig	sig	sig	sig	sig	sig
	High	sig	sig (-)		sig	sig (-)	

Post-GFC

		Model 1			Model 2		
	EL Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig	sig (-)	sig	sig	sig (-)
	High	sig	sig		sig	sig	
CORE	Low	sig			sig		
	High	sig			sig		
CE	Low	sig			sig		
	High	sig			sig		
CF	Low	sig			sig		
	High	sig	sig		sig	sig	

Panel C: S&P 500 Sample

Pre-GFC

		Model 1			Model 2		
	EL Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig		sig (-)	sig		
	High	sig	sig		sig	sig	sig (-)
CORE	Low	sig			sig		
	High	sig	sig	sig	sig		
CE	Low	sig			sig		
	High	sig	sig	sig	sig		sig
CF	Low	sig			sig		
	High	sig	sig	sig	sig		

GFC

		Model 1			Model 2		
	EL Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		
	High	sig	sig		sig	sig	sig
CORE	Low	sig			sig		
	High	sig	sig		sig	sig	
CE	Low	sig			sig		
	High	sig	sig		sig	sig	
CF	Low	sig	sig	sig	sig	sig	sig
	High	sig		sig	sig		sig

Post-GFC

		Model 1			Model 2		
	EL Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low		sig			sig	
	High	sig	sig		sig	sig	
CORE	Low		sig	sig	sig	sig	
	High	sig	sig	sig	sig	sig	
CE	Low		sig	sig	sig	sig	sig
	High	sig	sig	sig	sig	sig	sig
CF	Low		sig	sig	sig	sig	sig
	High	sig	sig	sig	sig	sig	sig

Panel D: Non-S&P 500 Sample

Pre-GFC

		Model 1			Model 2		
	EL Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		
	High	sig	sig (-)	sig (-)	sig	sig (-)	sig (-)
CORE	Low	sig			sig		sig
	High	sig	sig (-)		sig	sig (-)	
CE	Low	sig			sig		
	High	sig	sig (-)	sig (-)	sig	sig (-)	
CF	Low	sig			sig		
	High	sig	sig (-)	sig (-)	sig	sig (-)	sig (-)

GFC

		Model 1			Model 2		
	EL Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		
	High	sig		sig (-)	sig		sig (-)
CORE	Low	sig			sig		sig
	High	sig	sig (-)		sig	sig (-)	sig
CE	Low	sig			sig		
	High	sig	sig (-)	sig (-)	sig	sig (-)	
CF	Low	sig			sig		
	High	sig	sig (-)	sig (-)	sig	sig (-)	

Post-GFC

		Model 1			Model 2		
	EL Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig	sig (-)	sig	sig	sig (-)
	High	sig	sig		sig	sig	
CORE	Low	sig			sig		
	High	sig			sig		sig
CE	Low	sig			sig		
	High	sig			sig		sig (-)
CF	Low	sig			sig		
	High	sig			sig		

sig indicates the variable is statistically significant and positive at p = 0.05 or stronger. sig (-) indicates the variable is statistically significant and negative at p = 0.05 or stronger. The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. EL quintile is Low if e-loading quintile is 1 and High if e-loading quintile is 5. Low and High indicate low exposure to low quality earnings and high exposure to low quality earnings, respectively.

6.2 RESULTS

As with the previous chapter, the corresponding NonGAAPE measures in Equations 2.5 and 2.6 are IBES, CORE, CE and CF in the tables. The corresponding DIFF measures are DIFF1 and DIFF2 for Equation 2.5 (denoted as Model 1 in tables) and Equation 2.6 (denoted as Model 2 in tables), respectively. Recall that e-loading is inversely related to earnings quality. That is, high e-loading indicates high exposure to low earnings quality and low e-loading indicates low exposure to low earnings quality. Therefore, the high (low) quintile of e-loading indicates low (high) earnings quality.

My analyses use a two-way cluster approach to estimate robust standard errors, clustering on both firm and time. The reduced sub-sample and the increased number of variables in the models with main effect and interactions terms, however, resulted with insufficient number of clusters to calculate robust covariance matrix in some periods (e.g., the GFC period in the financial sector sample). Consequently, I re-estimated my models using a one-way cluster approach, i.e., the robust standard errors are clustered on firm. For consistency, I report the one-way cluster estimation results for all tests and samples.

6.2.1 Financial Sector Sample

6.2.1.1 Model Estimation with Main Effects and Interaction Terms

Table 6.3 shows the estimation results of the one-factor e-loading models with main effects and interaction terms for the financial sector sample. All models are statistically significant across all period windows.

In the pre-GFC period, BV is strongly significant across all alternative earnings measures. EL is marginally significant only in relation to CF model 2. The main effects of all non-GAAP earnings are not statistically significant. The main effect of GAAP earnings is marginally significant and negative only in relation to CORE Model 1. EL*BV is statistically significant and negative and EL*NonGAAPE is statistically significant and positive across all models. EL*DIFF, however, is only marginally significant and positive in relation to CORE and CF. These results show that investors are predominantly focused on the book value of equity when e-loading is low, i.e., exposure to low quality earnings is low.

Table 6.3: Ohlson Model: Financial Sector Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with One-Factor e-loading Dummy and Interaction Terms as Controls

$$\text{Model 1: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 EL_{it} + \beta_5 EL*BV_{it} + \beta_6 EL*NonGAAPE_{it} + \beta_7 EL*DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 EL_{it} + \beta_5 EL*BV_{it} + \beta_6 EL*NonGAAPE_{it} + \beta_7 EL*DIFF2_{it} + \varepsilon_{it}$$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.334^{***}	1.355^{***}	1.333^{***}	1.314^{***}	1.331^{***}	1.346^{***}	1.333^{***}	1.359^{***}
	(5.41)	(5.09)	(6.52)	(6.33)	(5.03)	(4.90)	(5.33)	(5.22)
NonGAAPE	3.555	3.073	4.169	3.935	3.649	2.908	3.345	2.728
	(0.85)	(0.61)	(1.09)	(0.99)	(0.84)	(0.60)	(0.89)	(0.61)
DIFF	4.153	3.648	-17.726^{*}	-14.837	3.242	-0.528	3.525	2.874
	(1.02)	(0.72)	(-2.16)	(-1.53)	(1.66)	(-0.12)	(0.85)	(0.61)
EL	0.761	1.306	0.653	0.941	1.615	1.581	1.992	3.396^{*}
	(0.36)	(0.67)	(0.34)	(0.47)	(0.96)	(0.89)	(1.06)	(2.06)
EL*BV	-0.584^{*}	-0.621^{*}	-0.568^{**}	-0.544^{**}	-0.606^{**}	-0.600^{*}	-0.552^{*}	-0.569^{*}
	(-2.41)	(-2.53)	(-2.61)	(-2.81)	(-2.73)	(-2.58)	(-2.36)	(-2.53)
EL*NonGAAPE	19.447^{**}	19.728^{**}	17.977^{*}	16.798^{*}	17.369^{*}	14.364^{*}	18.156^{*}	16.019^{*}
	(2.70)	(2.66)	(2.53)	(2.44)	(2.55)	(2.22)	(2.55)	(2.33)
EL*DIFF	5.230	5.239	34.764^{*}	27.134^{*}	6.505	-11.084	17.568^{*}	15.503^{*}
	(0.74)	(0.94)	(2.25)	(1.99)	(0.91)	(-0.71)	(2.35)	(2.15)
Intercept	8.652^{**}	8.423^{**}	10.069^{***}	10.544^{**}	8.746^{***}	8.381^{**}	8.739^{**}	8.523^{**}
	(2.91)	(2.91)	(3.68)	(4.12)	(3.56)	(3.18)	(3.02)	(3.02)
N	1634	1634	1634	1634	1634	1634	1634	1634
Adj R^2	0.8804	0.8816	0.8767	0.8764	0.8752	0.8733	0.8728	0.8699
BIC	16147	16130	16196	16201	16217	16241	16248	16284
BIC Rank	2	1	3	4	5	6	7	8

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.824^{***}	0.830^{***}	0.811^{**}	0.880^{**}	0.782^{***}	0.736^{**}	0.819^{***}	0.829^{***}
	(4.07)	(4.09)	(3.02)	(2.97)	(4.35)	(3.12)	(5.42)	(5.34)
NonGAAPE	4.909	4.994	0.090	0.085	0.378	0.634	-1.663	-1.376
	(1.43)	(1.53)	(0.09)	(0.09)	(0.27)	(0.43)	(-1.90)	(-1.43)
DIFF	-0.406	-0.246	0.427	2.633	-4.917^{*}	-11.311	-0.608	-0.341
	(-0.41)	(-0.24)	(0.10)	(0.52)	(-1.98)	(-0.99)	(-0.68)	(-0.35)
EL	-2.562	-2.399	-3.011	-1.356	-3.644	-3.493	-3.407	-2.986
	(-0.54)	(-0.51)	(-0.50)	(-0.21)	(-0.84)	(-0.76)	(-0.84)	(-0.73)
EL*BV	0.250	0.242	0.291	0.217	0.393	0.433	0.363	0.349
	(1.13)	(1.09)	(1.02)	(0.70)	(1.73)	(1.59)	(1.83)	(1.73)
EL*NonGAAPE	4.326	4.232	7.579^{**}	7.552^{**}	3.987^{*}	3.479^{*}	5.186^{***}	4.675^{***}
	(1.07)	(1.08)	(3.10)	(3.01)	(2.40)	(2.05)	(4.31)	(3.78)
EL*DIFF	1.660	1.381	1.245	-1.243	10.145^{**}	16.074	4.689^{***}	4.211^{**}
	(1.15)	(0.90)	(0.29)	(-0.24)	(2.68)	(1.42)	(3.75)	(3.30)
Intercept	10.425^{**}	10.336^{**}	11.296^{*}	9.769	11.718^{***}	11.847^{**}	11.536^{***}	11.363^{***}
	(2.64)	(2.65)	(2.09)	(1.65)	(3.54)	(3.29)	(3.91)	(3.78)
N	480	480	480	480	480	480	480	480
Adj R^2	0.8418	0.8416	0.8316	0.8329	0.8303	0.8286	0.8474	0.8466
BIC	4510	4511	4541	4537	4544	4549	4493	4496
BIC Rank	3	4	6	5	7	8	1	2

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	0.818***	0.817***	0.850***	0.875***	0.850***	0.846***	0.867***	0.868***
	(6.21)	(6.62)	(6.84)	(8.37)	(6.84)	(7.10)	(7.93)	(8.46)
NonGAAPE	8.958**	8.901**	5.629**	5.548**	5.989**	7.087**	5.652**	6.228***
	(3.07)	(3.23)	(2.93)	(3.24)	(2.84)	(2.81)	(2.74)	(3.35)
DIFF	-0.268	3.274	8.928	11.032*	2.164	10.208*	4.905*	5.614**
	(-0.11)	(0.86)	(1.45)	(2.42)	(0.34)	(2.31)	(2.46)	(3.05)
EL	0.558	-0.086	0.470	1.004	1.472	0.752	0.839	0.680
	(0.31)	(-0.05)	(0.25)	(0.43)	(0.57)	(0.38)	(0.43)	(0.35)
EL*BV	-0.153	-0.130	-0.176	-0.195	-0.194	-0.174	-0.199	-0.183
	(-1.82)	(-1.37)	(-1.73)	(-1.46)	(-1.68)	(-1.84)	(-1.65)	(-1.56)
EL*NonGAAPE	-2.523	-2.722	0.013	0.021	-1.506	-3.349	-1.388	-2.690
	(-1.02)	(-1.14)	(0.01)	(0.01)	(-0.60)	(-1.72)	(-0.51)	(-1.20)
EL*DIFF	2.169	-3.398	-7.401	-10.244**	1.843	-6.949	-0.298	-1.755
	(0.60)	(-1.04)	(-1.34)	(-2.75)	(0.25)	(-1.68)	(-0.10)	(-0.70)
Intercept	8.889***	8.950***	9.266***	8.547***	8.877***	9.193***	9.123***	8.858***
	(3.39)	(3.56)	(3.62)	(3.65)	(3.40)	(3.83)	(3.92)	(3.93)
N	1126	1126	1126	1126	1126	1126	1126	1126
Adj R^2	0.6929	0.6922	0.6886	0.6915	0.6861	0.6851	0.6894	0.6875
BIC	10174	10176	10189	10179	10198	10202	10186	10193
BIC Rank	1	2	5	3	7	8	4	6

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm.

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. EL = 1 if e-loading quintile is 5 and 0 if e-loading quintile is 1. EL*BV = Interaction term of e-loading with book value of common equity per share. EL*NonGAAPE = Interaction term of e-loading with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. EL*DIFF = Interaction term of e-loading with the corresponding DIFF measure of DIFF1 and DIFF2.

In contrast, the negative coefficient of EL*BV indicates that a high exposure to low quality earnings has a negative impact on investors' emphasis on the book value of equity. Furthermore, when exposure to low quality earnings is high, the results are consistent with investors seeking information from non-GAAP earnings, as indicated by a significant and positive EL*NonGAAPE. Nevertheless, GAAP earnings have increased incremental value relevance in relation to CORE and CF when exposure to low quality earnings is high. Using BIC to evaluate model performance, IBES performs best.

During the GFC, there is an observable shift in investors' emphasis. BV remains statistically significant in all models when exposure to low quality earnings is low but not when exposure to low quality earnings is high. EL is not statistically significant across all models. The main effect of non-GAAP earnings is not statistically significant, but the interaction term is statistically significant and positive in relation to CORE, CE and CF. The main effect of GAAP earnings is marginally significant and negative only in relation to CE Model 1. The interaction term of GAAP earnings, however, is statistically significant and positive in relation to CE and CF. These results suggest that investors are focused predominantly on the book value of equity relative to earnings during the GFC. Furthermore, when exposure to low quality earnings is high, investors appear to place increased emphasis on CORE, CE and CF. GAAP earnings are not incrementally value relevant in relation to IBES and CORE, but are generally incrementally value relevant in relation to CE and CF when exposure to low quality earnings is high.

I find contrasting results in the post-GFC period. Panel C shows BV and NonGAAPE are statistically significant across all models. DIFF is marginally to moderately significant in relation to CORE, CE and CF. EL, EL*BV and EL*NonGAAPE are not statistically significant. EL*DIFF is moderately significant and negative only in relation to CORE Model 2. These results indicate that investors give greater attention to both GAAP and non-GAAP earnings in the post-GFC period relative to the pre-GFC and GFC periods. Furthermore, a high level of exposure to low quality earnings does not impact on the emphasis investors place on the book value of equity and non-GAAP earnings. Generally, GAAP earnings are incrementally value relevant in relation to CORE, CE and CF. Also, investors appear to decrease the emphasis they place on GAAP earnings when exposure to low quality earnings is high in relation to CORE.

Overall, these results show investors focus predominantly on the book value of equity. However, they also show that investors shift their focus away from earnings during the GFC and return their focus to earnings in the post-GFC period. GAAP earnings are generally not incrementally value relevant in the post-GFC period when exposure to low quality earnings is high.

6.2.1.2 Model Estimation by Low and High e-loading

Table 6.4 presents the estimation results, by low and high e-loading, for the financial sector sample using the one-factor e-loading. Model 1 and Model 2 are presented in separate panels for each period window. All models are strongly significant.

Table 6.4: Ohlson Model: Financial Sector Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low One-Factor e-loading Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	EL Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.334***	3.555	4.153	8.652**	817	0.9195
	High	0.750*	23.003***	9.383	9.413**	817	0.8222
CORE	Low	1.333***	4.169	-17.726*	10.069***	817	0.9280
	High	0.764*	22.146**	17.038	10.722**	817	0.8003
CE	Low	1.331***	3.649	3.242	8.746***	817	0.9189
	High	0.725**	21.017***	9.747	10.361***	817	0.8101
CF	Low	1.333***	3.345	3.525	8.739**	817	0.9193
	High	0.780**	21.501**	21.093**	10.731**	817	0.8033

Panel B: Pre-GFC - Model 2

	EL Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.355***	3.073	3.648	8.423**	817	0.9186
	High	0.734*	22.801***	8.887	9.728**	817	0.8265
CORE	Low	1.314***	3.935	-14.837	10.544***	817	0.9284
	High	0.770**	20.733***	12.298	11.485**	817	0.7989
CE	Low	1.346***	2.908	-0.528	8.381**	817	0.9184
	High	0.747**	17.272**	-11.612	9.962**	817	0.8061
CF	Low	1.359***	2.728	2.874	8.523**	817	0.9184
	High	0.789**	18.747**	18.377**	11.918***	817	0.7977

Panel C: GFC - Model 1

	EL Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.824***	4.909	-0.406	10.425**	240	0.7376
	High	1.075***	9.234***	1.254	7.863**	240	0.8777
CORE	Low	0.811**	0.090	0.427	11.296*	240	0.7122
	High	1.103***	7.669***	1.671*	8.285**	240	0.8728
CE	Low	0.782***	0.378	-4.917*	11.718***	240	0.7261
	High	1.175***	4.365***	5.227	8.074**	240	0.8659
CF	Low	0.819***	-1.663	-0.608	11.536***	240	0.7816
	High	1.182***	3.523***	4.080***	8.129**	240	0.8692

Panel D: GFC - Model 2

	EL Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.830***	4.994	-0.246	10.336**	240	0.7369
	High	1.072***	9.227***	1.135	7.937**	240	0.8776
CORE	Low	0.880**	0.085	2.633	9.769	240	0.7183
	High	1.098***	7.638***	1.390	8.412**	240	0.8724
CE	Low	0.736**	0.634	-11.311	11.847**	240	0.7217
	High	1.169***	4.113***	4.763*	8.354**	240	0.8652
CF	Low	0.829***	-1.376	-0.341	11.363***	240	0.7799
	High	1.178***	3.299***	3.870***	8.376**	240	0.8687

Panel E: Post-GFC - Model 1

	EL Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.818^{***}	8.958^{**}	-0.268	8.889^{***}	563	0.6313
	High	0.665^{***}	6.435^{*}	1.901	9.446^{**}	563	0.7254
CORE	Low	0.850^{***}	5.629^{**}	8.928	9.266^{***}	563	0.6243
	High	0.674^{***}	5.641^{*}	1.527	9.737^{**}	563	0.7225
CE	Low	0.850^{***}	5.989^{**}	2.164	8.877^{***}	563	0.6245
	High	0.656^{***}	4.483	4.007^{*}	10.349^{**}	563	0.7185
CF	Low	0.867^{***}	5.652^{**}	4.905^{*}	9.123^{***}	563	0.6308
	High	0.668^{***}	4.264	4.607	9.962^{***}	563	0.7203

Panel F: Post-GFC - Model 2

	EL Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.817^{***}	8.901^{**}	3.274	8.950^{***}	563	0.6332
	High	0.687^{***}	6.179^{*}	-0.124	8.864^{**}	563	0.7232
CORE	Low	0.875^{***}	5.548^{**}	11.032^{*}	8.547^{***}	563	0.6338
	High	0.680^{***}	5.569^{*}	0.788	9.551^{**}	563	0.7219
CE	Low	0.846^{***}	7.087^{**}	10.208^{*}	9.193^{***}	563	0.6303
	High	0.672^{***}	3.738	3.260	9.946^{**}	563	0.7140
CF	Low	0.868^{***}	6.228^{***}	5.614^{**}	8.858^{***}	563	0.6346
	High	0.685^{***}	3.538	3.859	9.538^{***}	563	0.7154

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm.

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. EL quintile is Low if e-loading quintile is 1 and High if e-loading quintile is 5. Low and High indicate low exposure to low quality earnings and high exposure to low quality earnings, respectively.

In the pre-GFC period, all non-GAAP earnings are not statistically significant when e-loading is low, i.e., low exposure to low quality earnings, for both Model 1 and Model 2, in Panels A and B, respectively. Conversely, all non-GAAP earnings are moderately to strongly significant when e-loading is high, i.e., high exposure to low quality earnings, for both Model 1 and Model 2. DIFF1 and DIFF2 are not statistically significant when e-loading is low, except in relation to CORE and CE for Model 1. They are also not statistically significant when e-loading is high, except in relation to CF for both Model 1 and Model 2. BV is statistically significant in all models. Overall, investors do not appear to place emphasis on GAAP earnings except in relation to CORE and CF and it is not clear that investors find GAAP earnings incrementally value relevant at either extreme levels of exposure to low quality earnings. It appears investors are focused predominantly on the book value of equity. Interestingly, the magnitude of BV is consistently larger when exposure to low quality earnings is low in comparison to when it is high. In contrast, the magnitude of NonGAAPE is larger when exposure to low quality earnings is high.

It appears that when exposure to low quality is earnings is high, investors may be seeking information form alternative sources and, therefore, placing comparatively greater emphasis on non-GAAP earnings. Conversely, when exposure to low quality earnings is low, investors focus predominantly on the book value of equity.

During the GFC, all non-GAAP earnings are strongly significant at the high level of exposure to low quality earnings in both Model 1 and Model 2. The results of the incremental value relevance of GAAP earnings are mixed. DIFF1 is statistically significant and positive when exposure to low quality earnings is high in relation to CORE and CF. However, DIFF1 is statistically significant and negative when exposure to low quality earnings is low in relation to CE. DIFF2 is statistically significant when exposure to low quality earnings is high in relation to CE and CF.

The results show that, during the GFC, investors are predominantly focused on the book value of equity in valuing financial firms. Notably, non-GAAP earnings do not appear to be value relevant when exposure to low quality earnings is low. It is only when exposure to low quality earnings is high that non-GAAP earnings become statistically significant. Furthermore, the magnitude of BV is consistently larger when exposure to low quality earnings is high relative to when it is low. These results for the GFC period are in contrast to the results from the pre-GFC period. There is a shift in investors' emphasis on the book value of equity and non-GAAP earnings. It appears that when exposure to low quality earnings is high, investors seek information from alternative sources.

In the post-GFC period, IBES and CORE are statistically significant at both low and high levels of exposure to low quality earnings for both Models 1 and 2. However, DIFF2 are statistically significant only in relation to CORE when exposure to low quality earnings is low.

CE and CF are statistically significant when exposure to low quality earnings is low in both Model 1 and Model 2. DIFF1 is statistically significant when exposure to low quality earnings is high in relation to CE, but is statistically significant when exposure to low quality earnings is low in relation to CF. DIFF2 is only statistically significant when exposure to low quality earnings is low in relation to CORE, CE and CF. The pattern of the magnitude of BV and non-GAAP earnings in the post-GFC period is similar to those of the pre-GFC period.

These results provide additional insight into the emphasis investors place on the book value of equity. Specifically, they show that investors' emphasis on earnings information is not uniform at the extreme quintiles of exposure to low quality earnings. The results also show that the GFC has an impact on the emphasis investors place on GAAP and non-GAAP earnings. There is evidence of a shift in investors' focus in relation to non-GAAP earnings over the three sub-periods. However, the evidence of a shift in focus in relation to GAAP earnings is mixed.

6.2.2 Non-Financial Sector Sample

6.2.2.1 Model Estimation with Main Effects and Interaction Terms

Table 6.5 presents the estimation results of the one-factor e-loading models with main effects and interaction terms for the non-financial sector sample. All models are statistically significant across all period windows.

In the pre-GFC period, BV is strongly significant across all models, however, NonGAAPE is not statistically significant across all models. DIFF is only marginally significant in relation to CORE Model 2. EL and EL*BV are not statistically significant. In contrast, EL*NonGAAPE is statistically significant and negative in relation to CORE, CE and CF. These results indicate that investors are focused predominantly on the book value of equity when valuing the firm.

However, when exposure to low quality earnings is high, investors also give relatively greater emphasis to non-GAAP earnings and price the shares downwards. GAAP earnings are incrementally value relevant when exposure to low quality earnings is high only in relation to IBES and CF. The statistically significant coefficients are also negative, indicating that high level exposure to low quality earnings impacts on price negatively.

During the GFC, there is an observable shift in investors' focus. BV and NonGAAPE are statistically significant across all models. Additionally, the interactions terms are generally statistically significant across all models. The interaction term, EL*BV, is positive and the interaction terms of both GAAP and non-GAAP earnings are negative.

Table 6.5: Ohlson Model: Non-Financial Sector Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with One-Factor e-loading Dummy and Interaction Terms as Controls

$$\text{Model 1: } P_{it} = \alpha_{it} + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 EL_{it} + \beta_5 EL*BV_{it} + \beta_6 EL*NonGAAPE_{it} + \beta_7 EL*DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_{it} + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 EL_{it} + \beta_5 EL*BV_{it} + \beta_6 EL*NonGAAPE_{it} + \beta_7 EL*DIFF2_{it} + \varepsilon_{it}$$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.987***	1.998***	1.980***	1.967***	2.015***	2.096***	2.000***	2.013***
	(5.74)	(5.74)	(6.13)	(6.99)	(5.89)	(6.05)	(5.88)	(6.37)
NonGAAPE	5.979	5.906	5.762	5.180	5.601	5.236	5.620	5.486
	(0.77)	(0.76)	(0.77)	(0.86)	(0.74)	(0.86)	(0.78)	(0.95)
DIFF	-5.043	3.463	8.494	17.952*	6.569	9.611	5.586	5.436
	(-1.23)	(1.34)	(0.79)	(2.14)	(0.74)	(1.29)	(0.74)	(0.88)
EL	4.365	-0.270	2.509	1.501	2.863	0.049	3.124	0.522
	(1.48)	(-0.08)	(0.85)	(0.53)	(0.97)	(0.02)	(1.04)	(0.17)
EL*BV	-0.591	-0.035	-0.337	-0.347	-0.272	0.014	-0.315	-0.091
	(-1.80)	(-0.09)	(-0.93)	(-1.11)	(-0.73)	(0.03)	(-0.87)	(-0.25)
EL*NonGAAPE	-11.984	-12.335	-20.256*	-18.797*	-19.989*	-14.167*	-22.148**	-17.943*
	(-1.93)	(-1.85)	(-2.35)	(-2.48)	(-2.32)	(-2.04)	(-2.65)	(-2.52)
EL*DIFF	-15.909*	-13.091*	-15.480	-13.819	-18.597	-11.543	-17.917*	-12.525
	(-2.16)	(-2.34)	(-1.44)	(-1.50)	(-1.93)	(-1.59)	(-2.19)	(-1.91)
Intercept	4.963	5.060	4.972	5.297*	5.052	5.427*	5.013	5.141
	(1.83)	(1.86)	(1.77)	(2.01)	(1.84)	(2.06)	(1.82)	(1.91)
N	13213	13213	13213	13213	13213	13213	13213	13213
Adj R^2	0.6487	0.5992	0.6336	0.6372	0.6322	0.6087	0.6444	0.6226
BIC	125663	127405	126222	126089	126272	127090	125826	126612
BIC Rank	1	8	4	3	5	7	2	6

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.211***	1.230***	1.218***	1.256***	1.229***	1.395***	1.231***	1.313***
	(4.87)	(4.76)	(4.87)	(4.84)	(4.74)	(3.70)	(4.95)	(4.40)
NonGAAPE	10.994***	10.260***	10.771***	9.494***	11.053***	6.544**	10.059***	5.901**
	(3.70)	(3.67)	(3.72)	(3.47)	(3.58)	(3.25)	(3.37)	(2.69)
DIFF	6.553	1.872*	8.968**	-0.386	12.381**	11.385	10.830***	6.568**
	(1.94)	(2.42)	(3.18)	(-0.32)	(2.65)	(1.57)	(3.53)	(2.95)
EL	-0.801	-1.330	-0.906	-1.086	-0.846	-1.672	-0.820	-1.648
	(-0.21)	(-0.35)	(-0.24)	(-0.29)	(-0.23)	(-0.51)	(-0.21)	(-0.41)
EL*BV	0.760*	0.780*	0.734*	0.687*	0.716*	0.653	0.730*	0.660
	(2.30)	(2.37)	(2.41)	(2.22)	(2.29)	(1.62)	(2.33)	(1.90)
EL*NonGAAPE	-13.469**	-12.904**	-12.775***	-11.596***	-13.072***	-8.033***	-12.518***	-8.148***
	(-3.27)	(-3.30)	(-4.28)	(-4.11)	(-4.12)	(-3.75)	(-4.06)	(-3.53)
EL*DIFF	-8.346*	-2.990**	-11.107**	4.506***	-14.778**	-8.942	-11.667***	-6.942**
	(-2.44)	(-2.76)	(-2.60)	(3.60)	(-3.04)	(-1.21)	(-3.70)	(-2.99)
Intercept	6.230*	6.327*	6.368*	6.713*	6.288*	7.197*	6.255*	6.839*
	(2.00)	(2.00)	(2.07)	(2.19)	(2.06)	(2.56)	(2.03)	(2.07)
N	3470	3470	3470	3470	3470	3470	3470	3470
Adj R^2	0.6600	0.6563	0.6587	0.6579	0.6592	0.6461	0.6663	0.6506
BIC	31456	31493	31469	31477	31464	31595	31391	31551
BIC Rank	2	6	4	5	3	8	1	7

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.056***	1.031***	1.350***	1.422***	1.381***	1.414***	1.362***	1.424***
	(3.42)	(3.31)	(4.46)	(5.20)	(4.43)	(3.96)	(4.76)	(5.48)
NonGAAPE	19.175***	20.091***	4.503	1.576	4.049	1.646	3.436	1.031
	(3.96)	(4.17)	(0.84)	(0.51)	(0.78)	(0.66)	(0.65)	(0.38)
DIFF	-5.430***	-3.922**	9.148	1.945	5.333	1.243	4.516	1.832
	(-6.44)	(-3.02)	(1.61)	(0.75)	(1.02)	(0.23)	(0.89)	(0.80)
EL	2.763	2.923	0.697	0.233	0.168	-0.138	0.624	0.303
	(0.87)	(0.92)	(0.21)	(0.07)	(0.05)	(-0.05)	(0.20)	(0.10)
EL*BV	0.092	0.126	0.085	0.069	-0.001	-0.006	0.036	0.038
	(0.26)	(0.35)	(0.28)	(0.23)	(-0.00)	(-0.01)	(0.12)	(0.13)
EL*NonGAAPE	-2.567	-3.761	2.702	4.354	3.344	4.400	6.391	7.302**
	(-0.34)	(-0.50)	(0.77)	(1.15)	(0.95)	(1.24)	(1.66)	(2.67)
EL*DIFF	6.348	4.087	-0.582	3.589	-0.818	0.777	3.828	5.041
	(1.29)	(1.13)	(-0.14)	(1.13)	(-0.21)	(0.11)	(1.15)	(1.79)
Intercept	6.238*	6.005*	7.851**	8.217**	8.160**	8.162***	8.037**	8.195**
	(2.08)	(1.97)	(2.60)	(2.74)	(2.80)	(3.48)	(2.78)	(2.81)
N	7740	7740	7740	7740	7740	7740	7740	7740
Adj R^2	0.5196	0.5210	0.4390	0.4304	0.4382	0.4316	0.4442	0.4372
BIC	71329	71307	72530	72649	72541	72631	72458	72555
BIC Rank	2	1	4	8	5	7	3	6

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm.

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. EL = 1 if e-loading quintile is 5 and 0 if e-loading quintile is 1. EL*BV = Interaction term of e-loading with book value of common equity per share. EL*NonGAAPE = Interaction term of e-loading with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. EL*DIFF = Interaction term of e-loading with the corresponding DIFF measure of DIFF1 and DIFF2.

The results suggest that investors decrease the emphasis they place on non-GAAP earnings when exposure to low quality earnings is high. Similarly, investors also decrease the emphasis they place on GAAP earnings when exposure to low quality earnings is high. In contrast, they appear to increase their focus on BV when exposure to low quality earnings is high.

In the post-GFC period, however, investors shift their focus and the results are similar to those observed in the pre-GFC period. BV is strongly significant across all models, however, NonGAAPE and DIFF are only statistically significant in relation to IBES. EL and all interaction terms are generally not statistically significant except for EL*NonGAAPE in relation to CF Model 2, where it is moderately significant and positive. It appears that after the peak of the GFC, investors returned their focus to the book value of equity.

Overall, IBES and CF models generally perform best based on BIC across all three period windows. Furthermore, the results suggest that share price is driven primarily by the book value of equity. However, when there is significant uncertainty, as in the peak of the GFC, investors appear to seek other information and factor in their exposure to low quality earnings. Also, there is some evidence of a trade-off in the relative emphasis investors place on BV and earnings when exposure to low quality earnings is high.

6.2.2.2 Model Estimation by Low and High e-loading

The estimation results, by low and high e-loading, for the non-financial sector sample are presented in Table 6.6. In Panels A and B, non-GAAP earnings are generally statistically significant and negative at high levels of exposure to low quality earnings in both Model 1 and Model 2 in the pre-GFC period. DIFF1 is statistically significant and negative when exposure to low quality earnings is high, but it is not statistically significant when exposure to low quality earnings is low.

In contrast, DIFF2 is marginally significant and negative when exposure to low quality earnings is high in relation to CF and is marginally significant and positive when exposure to low quality earnings is low in relation to CORE. These results are consistent with investors discounting firm value for low quality earnings.

The negative coefficients for non-GAAP earnings indicate high non-GAAP earnings are associated with low share price. Negative and significant DIFF1 and DIFF2 at high level of exposure to low quality earnings indicate that GAAP earnings are incrementally value relevant and that investors place greater emphasis on GAAP earnings, which are generally closer to, or less than, non-GAAP earnings.

In the GFC period, non-GAAP earnings are generally statistically significant across all levels of exposure to low quality earnings for Model 1 and Model 2, except in relation to IBES (Model 1 and Model 2) where it is not statistically significant when exposure to low quality earnings is high. Furthermore, the sign of the statistically significant non-GAAP earnings is negative when exposure to low quality earnings is high and positive when exposure to low quality earnings is low. These results are consistent with investors discounting the share price of firms with low quality earnings.

Table 6.6: Ohlson Model: Non-Financial Sector Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low One-Factor e-loading Quintiles

Model 1: $P_{it} = \alpha_{0} + \beta_{1}BV_{it} + \beta_{2}NonGAAPE_{it} + \beta_{3}DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_{0} + \beta_{1}BV_{it} + \beta_{2}NonGAAPE_{it} + \beta_{3}DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	EL Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.987***	5.979	-5.043	4.963	6606	0.6185
	High	1.397***	-6.005	-20.951***	9.328***	6607	0.6631
CORE	Low	1.980***	5.762	8.494	4.972	6606	0.6164
	High	1.644***	-14.494**	-6.987**	7.482***	6607	0.6407
CE	Low	2.015***	5.601	6.569	5.052	6606	0.6160
	High	1.743***	-14.388**	-12.028*	7.915***	6607	0.6387
CF	Low	2.000***	5.620	5.586	5.013	6606	0.6158
	High	1.684***	-16.528***	-12.331***	8.138***	6607	0.6578

Panel B: Pre-GFC - Model 2

	EL Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.998***	5.906	3.463	5.060	6606	0.6193
	High	1.963***	-6.429*	-9.628	4.791*	6607	0.5857
CORE	Low	1.967***	5.180	17.952*	5.297*	6606	0.6260
	High	1.620***	-13.617**	4.133	6.798***	6607	0.6411
CE	Low	2.096***	5.236	9.611	5.427*	6606	0.6214
	High	2.109***	-8.930*	-1.931	5.476*	6607	0.5992
CF	Low	2.013***	5.486	5.436	5.141	6606	0.6188
	High	1.922***	-12.456**	-7.089*	5.664**	6607	0.6223

Panel C: GFC - Model 1

	EL Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.211***	10.994***	6.553	6.230*	1735	0.6651
	High	1.971***	-2.474	-1.793*	5.429**	1735	0.6529
CORE	Low	1.218***	10.771***	8.968**	6.368*	1735	0.6624
	High	1.953***	-2.004**	-2.140	5.462**	1735	0.6527
CE	Low	1.229***	11.053***	12.381**	6.288*	1735	0.6635
	High	1.945***	-2.019**	-2.397	5.442**	1735	0.6527
CF	Low	1.231***	10.059***	10.830***	6.255*	1735	0.6684
	High	1.961***	-2.459***	-0.837	5.435**	1735	0.6615

Panel D: GFC - Model 2

	EL Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.230***	10.260***	1.872*	6.327*	1735	0.6620
	High	2.011***	-2.645	-1.118	4.997**	1735	0.6487
CORE	Low	1.256***	9.494***	-0.386	6.713*	1735	0.6542
	High	1.943***	-2.102**	4.120***	5.626***	1735	0.6572
CE	Low	1.395***	6.544**	11.385	7.197*	1735	0.6339
	High	2.048***	-1.489*	2.443	5.525***	1735	0.6512
CF	Low	1.313***	5.901**	6.568**	6.839*	1735	0.6323
	High	1.973***	-2.248**	-0.375	5.191**	1735	0.6602

Panel E: Post-GFC - Model 1

	EL Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.056^{***}	19.175^{***}	-5.430^{***}	6.238^{*}	3870	0.6109
	High	1.147^{***}	16.608^{**}	0.919	9.001^{***}	3870	0.4343
CORE	Low	1.350^{***}	4.503	9.148	7.851^{**}	3870	0.5237
	High	1.436^{***}	7.205	8.566	8.548^{***}	3870	0.3599
CE	Low	1.381^{***}	4.049	5.333	8.160^{**}	3870	0.5189
	High	1.380^{***}	7.393	4.515	8.328^{***}	3870	0.3628
CF	Low	1.362^{***}	3.436	4.516	8.037^{**}	3870	0.5231
	High	1.398^{***}	9.828^{*}	8.344	8.660^{***}	3870	0.3705

Panel F: Post-GFC - Model 2

	EL Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.031^{***}	20.091^{***}	-3.922^{**}	6.005^{*}	3870	0.6142
	High	1.157^{***}	16.330^{**}	0.166	8.928^{***}	3870	0.4339
CORE	Low	1.422^{***}	1.576	1.945	8.217^{**}	3870	0.5104
	High	1.491^{***}	5.930	5.535	8.450^{***}	3870	0.3556
CE	Low	1.414^{***}	1.646	1.243	8.162^{***}	3870	0.5104
	High	1.408^{***}	6.046	2.020	8.024^{***}	3870	0.3580
CF	Low	1.424^{***}	1.031	1.832	8.195^{**}	3870	0.5133
	High	1.462^{***}	8.333^{*}	6.873	8.498^{***}	3870	0.3660

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm.

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. EL quintile is Low if e-loading quintile is 1 and High if e-loading quintile is 5. Low and High indicate low exposure to low quality earnings and high exposure to low quality earnings, respectively.

The results for DIFF1 and DIFF2 are mixed. Where DIFF1 is statistically significant, the coefficient is positive when exposure to low quality earnings is low, and negative when exposure to low quality is high. DIFF2 is statistically significant and positive in relation to IBES and CF when exposure to low quality earnings is low. However, DIFF2 is also significant and positive in relation to CORE when exposure to low quality earnings is high.

Generally, these results suggest that GAAP earnings are incrementally value relevant. Furthermore, it appears there is asymmetric treatment of GAAP earnings by investors. When exposure to low quality earnings is low, investors appear to place greater emphasis on GAAP earnings that are relatively greater than non-GAAP earnings. However, when exposure to low quality earnings is high, investors appear to place greater emphasis on GAAP earnings, which are generally closer to, or less than, non-GAAP earnings.

In the post-GFC period, IBES is statistically significant and positive at both levels of exposure to low quality earnings in Model 1 and Model 2, and CF is statistically significant and positive when exposure to low quality earnings is high in Model 1 and Model 2. CORE and CE are not statistically significant. DIFF1 and DIFF2 are only statistically significant and negative in relation to IBES when exposure to low quality earnings is low.

While investors continue to focus predominantly on the book value of equity, the results across the three period windows also show an observable shift in investors' focus on earnings. Pre-GFC, investors generally focus on GAAP and non-GAAP earnings when exposure to low quality earnings is high. Furthermore, the results indicate investors discount the share price of firms with poor quality earnings; the unique effect of both NonGAAPE and DIFF is generally negative when exposure to low quality earnings is high. During the GFC, there appears to be relatively greater emphasis on earnings by investors and that their valuation of earnings is asymmetric between high and low levels of exposure to low quality earnings. In contrast, in the post-GFC period, investors' emphasis appears to be almost exclusively on the book value of equity. With the exception of IBES, all other GAAP and non-GAAP earnings do not appear to be value relevant.

Overall, the results from the one-factor e-loading analyses are generally consistent with expectations. They indicate that firm value is discounted for low quality earnings. Also, the GFC has an impact on investors' focus on earnings. There is evidence of a change in emphasis from the pre-GFC period to the post-GFC period. Furthermore, there is some evidence of a trade-off between investors' emphasis on the book value of equity and earnings during the GFC.

6.2.3 S&P 500 Sample

6.2.3.1 Model Estimation with Main Effects and Interaction Terms

Table 6.7 presents the estimation results of the one-factor e-loading models with main effects and interaction terms for the S&P 500 sample. All models are statistically significant across all period windows.

Table 6.7: Ohlson Model: S&P 500 Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with One-Factor e-loading Dummy and Interaction Terms as Controls

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 EL_{it}$
$+ \beta_5 EL * BV_{it} + \beta_6 EL * NonGAAPE_{it} + \beta_7 EL * DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 EL_{it}$
$+ \beta_5 EL * BV_{it} + \beta_6 EL * NonGAAPE_{it} + \beta_7 EL * DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.249***	1.266***	1.322***	1.296***	1.335***	1.370***	1.310***	1.351***
	(5.92)	(5.49)	(6.69)	(8.57)	(6.13)	(8.59)	(6.33)	(9.82)
NonGAAPE	7.020	6.607	4.827	5.480	4.601	3.716	5.898	4.600
	(1.20)	(1.04)	(0.87)	(1.33)	(0.78)	(0.95)	(1.01)	(1.27)
DIFF	-12.312**	-1.337	-2.332	-7.398	4.513	4.792	5.614	4.355
	(-3.02)	(-0.75)	(-0.28)	(-1.61)	(0.77)	(1.27)	(0.97)	(1.21)
EL	-5.941*	-5.978*	-6.843*	-6.426**	-6.185*	-5.575*	-5.918*	-5.998*
	(-2.47)	(-2.48)	(-2.36)	(-2.65)	(-2.25)	(-2.08)	(-2.20)	(-2.43)
EL*BV	-0.053	-0.076	0.241**	0.345***	0.232**	0.377***	0.238*	0.318***
	(-0.41)	(-0.56)	(2.81)	(3.51)	(2.60)	(3.60)	(2.57)	(3.34)
EL*NonGAAPE	7.607	8.269	0.580	-3.262	1.222	-2.542	-0.697	-3.340
	(1.12)	(1.14)	(0.10)	(-0.70)	(0.19)	(-0.63)	(-0.11)	(-0.88)
EL*DIFF	11.054**	0.567	7.574	6.682	2.619	1.645	-0.113	-2.904
	(2.71)	(0.31)	(0.88)	(1.41)	(0.40)	(0.28)	(-0.02)	(-0.76)
Intercept	17.029***	16.935***	17.816***	17.984**	17.115***	17.602***	16.994***	17.313***
	(17.30)	(17.12)	(15.17)	(18.30)	(16.30)	(14.53)	(16.99)	(18.10)
N	3117	3117	3117	3117	3117	3117	3117	3117
Adj R^2	0.8832	0.8820	0.8710	0.8681	0.8703	0.8662	0.8706	0.8655
BIC	26795	26828	27106	27175	27122	27219	27115	27234
BIC Rank	1	2	3	6	5	7	4	8

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.097***	1.118***	1.111***	1.150***	1.093***	1.144***	1.117***	1.121***
	(12.94)	(13.02)	(11.57)	(11.68)	(10.01)	(9.19)	(22.27)	(21.23)
NonGAAPE	3.839	3.596	2.849	2.475	1.988	2.327	2.461***	2.418***
	(1.69)	(1.50)	(1.49)	(1.24)	(1.52)	(1.80)	(4.06)	(4.05)
DIFF	0.199	0.843	0.923	2.158	-1.053	1.659	3.424***	3.353***
	(0.19)	(0.62)	(0.55)	(1.06)	(-0.40)	(0.44)	(5.72)	(5.77)
EL	7.512	7.893*	10.635**	11.282**	10.878**	11.705**	9.610**	9.798**
	(1.95)	(2.11)	(2.67)	(2.95)	(2.73)	(3.04)	(2.68)	(2.76)
EL*BV	-0.436*	-0.449*	-0.164	-0.189	-0.211	-0.201	-0.067	-0.018
	(-2.27)	(-2.38)	(-0.82)	(-0.95)	(-1.07)	(-0.93)	(-0.34)	(-0.10)
EL*NonGAAPE	9.798*	9.880*	1.747	1.832	2.731	1.048	0.473	-0.808
	(2.57)	(2.56)	(0.72)	(0.75)	(1.33)	(0.65)	(0.28)	(-0.73)
EL*DIFF	-0.381	-0.059	0.274	-0.903	4.016	0.362	1.013	-0.242
	(-0.33)	(-0.04)	(0.08)	(-0.39)	(1.35)	(0.09)	(0.62)	(-0.22)
Intercept	15.360***	15.194***	15.835***	15.350***	15.692***	15.287***	15.511***	15.916***
	(6.20)	(6.55)	(6.38)	(6.75)	(6.11)	(6.86)	(9.47)	(9.92)
N	870	870	870	870	870	870	870	870
Adj R^2	0.7003	0.7012	0.6769	0.6785	0.6793	0.6774	0.7194	0.7195
BIC	8071	8068	8136	8132	8130	8135	8013	8013
BIC Rank	4	3	8	6	5	7	1	1

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	0.304	0.289	0.356	0.447*	0.295	0.465*	0.337	0.550**
	(1.46)	(1.40)	(1.62)	(2.19)	(1.26)	(1.98)	(1.50)	(2.76)
NonGAAPE	31.920***	31.963***	26.260***	24.282***	25.143***	18.567**	25.594***	18.792**
	(4.88)	(4.87)	(4.04)	(3.83)	(4.00)	(3.26)	(3.96)	(3.16)
DIFF	-4.732	2.533	14.987*	0.027	20.716***	12.053*	26.341***	18.453**
	(-1.12)	(1.90)	(2.26)	(0.01)	(3.88)	(2.35)	(4.03)	(3.15)
EL	-7.803	-8.383	-10.637*	-9.881*	-10.896*	-8.061	-10.656*	-8.602
	(-1.83)	(-1.89)	(-2.25)	(-1.99)	(-2.26)	(-1.62)	(-2.22)	(-1.54)
EL*BV	0.252	0.241	0.708*	0.705*	0.684	0.570	0.718*	0.555
	(0.81)	(0.78)	(2.29)	(2.25)	(1.92)	(1.44)	(2.32)	(1.68)
EL*NonGAAPE	12.112	11.827	6.313	5.606	7.766	7.794	6.770	7.553
	(1.63)	(1.59)	(0.86)	(0.77)	(1.07)	(1.13)	(0.92)	(1.07)
EL*DIFF	12.548	-2.223	9.783	1.810	9.013	11.171	6.170	7.570
	(1.71)	(-1.09)	(1.14)	(0.35)	(1.25)	(1.19)	(0.83)	(1.06)
Intercept	15.476***	16.057***	19.838***	20.262***	19.719***	21.389***	19.685***	22.375***
	(10.36)	(10.62)	(14.12)	(15.39)	(13.10)	(13.17)	(14.05)	(11.28)
N	2188	2188	2188	2188	2188	2188	2188	2188
Adj R^2	0.6080	0.6037	0.5309	0.5100	0.5294	0.4629	0.5275	0.4607
BIC	21699	21723	22092	22187	22099	22388	22108	22397
BIC Rank	1	2	3	6	4	7	5	8

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm.

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. EL = 1 if e-loading quintile is 5 and 0 if e-loading quintile is 1. EL*BV = Interaction term of e-loading with book value of common equity per share. EL*NonGAAPE = Interaction term of e-loading with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. EL*DIFF = Interaction term of e-loading with the corresponding DIFF measure of DIFF1 and DIFF2.

In the pre-GFC period, BV is strongly significant across all models but NonGAAPE is not statistically significant. Also, the interaction term, EL*NonGAAPE, is not statistically significant in all models. In contrast, EL*BV is statistically significant in relation to CORE, CE and CF. DIFF is moderately significant and negative only in relation to IBES Model 1.

EL is marginally to moderately significant and negative in all models, which indicates that high exposure to poor quality earnings has a negative impact on share price. These results suggest that investors in large firms are predominantly focused on the book value of equity. Both GAAP and non-GAAP earnings do not appear to be value relevant at both low and high levels of exposure to poor quality earnings. IBES models perform best based on BIC in relation to all models tested.

In the GFC period, investors appear to remain focused on the book value of equity. There is some evidence of a shift in focus, however, in relation to CF. CF is strongly significant and positive in the GFC period. Also, GAAP earnings appear to be incrementally value relevant in relation to CF. EL is statistically significant and positive in all models except IBES Model 1. This is contrary to expectations. Subsequent analyses in Section 6.2.3.2 show investors give greater emphasis to both GAAP and non-GAAP earnings than is evident here. An explanation for the results observed here is that pooling the sample and including main effects and interaction terms for earnings variables may bias the results, particularly as there is structural multicollinearity inherent in models with main effects and interaction terms.

EL*BV is statistically significant and negative only in relation to IBES, which indicates that investors decrease their focus on the book value of equity when the exposure to poor quality earnings is high. GAAP earnings are not incrementally value relevant when exposure to low quality earnings is high. In terms of model performance, CF models perform best based on BIC.

In the post-GFC period, there is an observable shift in investors' focus. It appears that investors focus predominantly on non-GAAP earnings, which is in contrast to the pre-GFC and GFC periods. Generally, EL is statistically significant and negative in relation to CORE, CE and CF. DIFF is statistically significant and positive in relation to CORE, CE and CF generally. The interaction term, EL*BV, is marginally significant and positive only in relation to CORE and CF. EL*NonGAAPE and EL*DIFF are not statistically significant in all models. These results indicate investors give greater emphasis to non-GAAP earnings in the post-GFC period in comparison to the pre-GFC period. Furthermore, a high level of exposure to low quality earnings does not appear to change the emphasis investors place on both GAAP and non-GAAP earnings. Based on BIC, IBES models perform best.

6.2.3.2 Model Estimation by Low and High e-loading

The estimation results, by low and high e-loading, for firms in the S&P 500 sample are presented in Table 6.8. In the pre-GFC period, BV is strongly significant in all models at both low and high levels of exposure to low quality earnings.

Table 6.8: Ohlson Model: S&P 500 Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low One-Factor e-loading Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	EL Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.249***	7.020	-12.312**	17.029***	1558	0.9097
	High	1.196***	14.627***	-1.258	11.088***	1559	0.8133
CORE	Low	1.322***	4.827	-2.332	17.816***	1558	0.9072
	High	1.563***	5.407***	5.242*	10.973***	1559	0.7760
CE	Low	1.335***	4.601	4.513	17.115***	1558	0.9052
	High	1.566***	5.823***	7.132***	10.931***	1559	0.7788
CF	Low	1.310***	5.898	5.614	16.994***	1558	0.9063
	High	1.548***	5.201**	5.500***	11.077***	1559	0.7768

Panel B: Pre-GFC - Model 2

	EL Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.266***	6.607	-1.337	16.935***	1558	0.9077
	High	1.190***	14.876***	-0.770**	10.958***	1559	0.8142
CORE	Low	1.296***	5.480	-7.398	17.984***	1558	0.9084
	High	1.641***	2.218	-0.715	11.558***	1559	0.7627
CE	Low	1.370***	3.716	4.792	17.602***	1558	0.9049
	High	1.747***	1.174	6.437*	12.027***	1559	0.7647
CF	Low	1.351***	4.600	4.355	17.313***	1558	0.9058
	High	1.668***	1.260	1.451	11.315***	1559	0.7602

Panel C: GFC - Model 1

	EL Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.097***	3.839	0.199	15.360***	435	0.8085
	High	0.661***	13.637***	-0.182	22.872***	435	0.3438
CORE	Low	1.111***	2.849	0.923	15.835***	435	0.8053
	High	0.948***	4.596**	1.196	26.470***	435	0.2537
CE	Low	1.093***	1.988	-1.053	15.692***	435	0.8068
	High	0.882***	4.719**	2.963	26.570***	435	0.2590
CF	Low	1.117***	2.461***	3.424***	15.511***	435	0.8545
	High	1.051***	2.934	4.437**	25.121***	435	0.2747

Panel D: GFC - Model 2

	EL Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.118***	3.596	0.843	15.194***	435	0.8089
	High	0.670***	13.475***	0.784*	23.087***	435	0.3460
CORE	Low	1.150***	2.475	2.158	15.350***	435	0.8069
	High	0.961***	4.307**	1.255	26.632***	435	0.2554
CE	Low	1.144***	2.327	1.659	15.287***	435	0.8069
	High	0.943***	3.375**	2.021	26.992***	435	0.2507
CF	Low	1.121***	2.418***	3.353***	15.916***	435	0.8553
	High	1.103***	1.609	3.111**	25.714***	435	0.2722

Panel E: Post-GFC - Model 1

	EL Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.304	31.920***	-4.732	15.476***	1094	0.5634
	High	0.556*	44.032***	7.817	7.673	1094	0.6204
CORE	Low	0.356	26.260***	14.987*	19.838***	1094	0.5054
	High	1.065***	32.573***	24.770***	9.201	1094	0.5369
CE	Low	0.295	25.143***	20.716***	19.719***	1094	0.5021
	High	0.979**	32.909***	29.729***	8.823	1094	0.5361
CF	Low	0.337	25.594***	26.341***	19.685***	1094	0.4988
	High	1.055***	32.365***	32.512***	9.030	1094	0.5346

Panel F: Post -GFC - Model 2

	EL Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.289	31.963***	2.533	16.057***	1094	0.5636
	High	0.530*	43.790***	0.310	7.674	1094	0.6147
CORE	Low	0.447*	24.282***	0.027	20.262***	1094	0.4880
	High	1.152***	29.888***	1.838	10.381*	1094	0.5149
CE	Low	0.465*	18.567**	12.053*	21.389***	1094	0.4478
	High	1.036**	26.361***	23.224*	13.329**	1094	0.4654
CF	Low	0.550**	18.792**	18.453**	22.375***	1094	0.4392
	High	1.106***	26.345***	26.022***	13.774*	1094	0.4653

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm.

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. EL quintile is Low if e-loading quintile is 1 and High if e-loading quintile is 5. Low and High indicate low exposure to low quality earnings and high exposure to low quality earnings, respectively.

In relation to Model 1, non-GAAP earnings are not statistically significant when exposure to low quality earnings is low but are statistically significant and positive when exposure to low quality earnings is high. In Model 2, however, only IBES is statistically significant at the high level of exposure to low quality earnings.

DIFF1 is statistically significant and positive when exposure to low quality earnings is high in relation to CORE, CE and CF. DIFF1 is only statistically significant and negative, however, when exposure to low quality earnings is low in relation to IBES. Panel B shows DIFF2 is statistically significant in relation IBES and CE when exposure to low quality earnings is high. However, in relation to IBES, the sign of the coefficient is negative. CF and CORE are not statistically significant.

During the GFC, IBES, CORE and CE are statistically significant and positive at the high level of exposure to low quality earnings in Model 1 and Model 2. CF, however, is statistically significant only when exposure to low quality earnings is low for both models.

In Panel C, DIFF1 is statistically significant and positive only in relation to CF at both levels of exposure to low quality earnings. In Panel D, DIFF2 is statistically significant at both levels of exposure to low quality earnings in relation to CF. DIFF2 is also statistically significant when exposure to low quality earnings is low in relation to IBES. BV remains strongly significant in all models.

In the post-GFC period, all non-GAAP earnings are statistically significant and positive for both levels of exposure to low quality earnings in all models. In Panel E, DIFF1 is statistically significant and positive at low and high levels of exposure to low quality earnings in relation to CORE, CE and CF. In Panel F, DIFF2 is statistically significant at low and high levels of exposure to low quality earnings in relation to CE and CF. BV is only statistically significant at high level of exposure to low quality earnings in Model 1. In Model 2, however, BV is statistically significant at both levels of exposure to low quality earnings in relation to CORE, CE and CF, and only at high level of exposure to low quality earnings in relation to IBES.

The results for large firms show share price is driven largely by the book value of equity. Non-GAAP earnings are generally value relevant only at the high level of exposure to low quality earnings in the pre-GFC and GFC periods. This is consistent with investors seeking information from alternative sources to mitigate exposure to low quality earnings. There is some evidence that GAAP earnings are incrementally value relevant but it is mixed. Interestingly, the sign of statistically significant NonGAAPE, DIFF1 and DIFF2 are generally positive, which suggests investors are not discounting firm value for low quality earnings.

An explanation for the result is size. This sample comprises large firms, which may be relatively homogenous in terms of risk of poor quality earnings. Furthermore, while a firm in the S&P500 may be assigned to a high-risk quintile, this risk may still be low relative to the market. Furthermore, large firms generally have more analysts following them and more information available from alternative sources, which may explain the value relevance of non-GAAP earnings when exposure to low quality earnings is high. Therefore, the results may reflect a bias in the sample.

There is some evidence of a shift in investors' focus, particularly in relation to Model 1, between the pre-GFC and post-GFC periods. DIFF1 is generally incrementally value relevant at both levels of exposure to low quality earnings in the post-GFC period, which is in contrast to the pre-GFC and GFC periods. More interestingly, however, are the results for BV and NonGAAPE. It appears that investors generally find the book value of equity more value relevant when exposure to low quality earnings is high in comparison to when it is low. Similarly, the magnitude of NonGAAPE is consistently larger at high level of exposure to low quality earnings relative to low level of exposure to low quality earnings. Nevertheless, it also appears that, in the post-GFC period, investors shifted their focus and generally place greater emphasis on non-GAAP earnings in comparison to the pre-GFC and GFC periods.

6.2.4 Non-S&P 500 Sample

6.2.4.1 Model Estimation with Main Effects and Interaction Terms

Table 6.9 shows the non-S&P 500 sample estimation results for models with main effects and interaction terms. All models are statistically significant across all period windows.

In the pre-GFC period, BV is strongly significant in all models. However, NonGAAPE, EL and EL*BV are not statistically significant. DIFF is only marginally significant in relation to CORE in Model 2. EL*NonGAAPE is marginally significant and negative in all models except IBES in Model 1. EL*DIFF is statistically significant and negative in relation to IBES and CF. The results show that investors are focused predominantly on the book value of equity. It appears that investors significantly reduce the emphasis they place on non-GAAP earnings when exposure to low quality earnings is high. Similarly, there is evidence that investors also significantly reduce the emphasis they place on GAAP earnings when exposure to low quality earnings is high in relation to IBES and CF. Furthermore, the unique effects (the sum of the coefficients of the main effect and its corresponding interaction term) of both NonGAAPE and DIFF are negative, which indicate that earnings of firms with high exposure to low quality earnings are negatively related with share price.

I find similar results during the GFC. Investors remain focused predominantly on the book value of equity and give greater emphasis to CORE, CE and CF when exposure to low quality earnings is high. In contrast to the pre-GFC period, GAAP earnings are not incrementally value relevant when exposure to low quality earnings is high.

Table 6.9: Ohlson Model: Non-S&P 500 Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with One-Factor e-loading Dummy and Interaction Terms as Controls

$$\text{Model 1: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 EL_{it} + \beta_5 EL*BV_{it} + \beta_6 EL*NonGAAPE_{it} + \beta_7 EL*DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 EL_{it} + \beta_5 EL*BV_{it} + \beta_6 EL*NonGAAPE_{it} + \beta_7 EL*DIFF2_{it} + \varepsilon_{it}$$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.656***	1.652***	1.628***	1.578***	1.605***	1.613***	1.652***	1.649***
	(4.52)	(4.60)	(4.70)	(4.86)	(4.41)	(4.35)	(4.48)	(4.60)
NonGAAPE	3.167	3.489	3.406	3.724	3.304	3.705	2.955	3.267
	(0.41)	(0.50)	(0.45)	(0.57)	(0.43)	(0.53)	(0.40)	(0.49)
DIFF	3.483	3.973	7.709	18.422*	-1.645	0.424	3.366	3.618
	(0.47)	(0.61)	(0.68)	(2.02)	(-0.18)	(0.05)	(0.43)	(0.52)
EL	3.247	0.215	1.458	0.672	2.743	1.193	2.630	0.870
	(1.09)	(0.07)	(0.47)	(0.23)	(0.98)	(0.40)	(0.91)	(0.30)
EL*BV	-0.429	-0.092	-0.241	-0.219	-0.095	0.092	-0.253	-0.120
	(-1.39)	(-0.30)	(-0.78)	(-0.79)	(-0.31)	(0.26)	(-0.78)	(-0.38)
EL*NonGAAPE	-11.161	-11.834*	-21.186*	-20.813*	-21.428*	-17.096*	-22.329*	-18.542*
	(-1.80)	(-2.01)	(-2.39)	(-2.50)	(-2.42)	(-2.07)	(-2.53)	(-2.20)
EL*DIFF	-28.541**	-19.093*	-13.289	-15.763	-12.637	-7.158	-20.303*	-15.724*
	(-3.04)	(-2.02)	(-1.13)	(-1.57)	(-1.35)	(-0.85)	(-2.29)	(-1.96)
Intercept	6.504	6.587*	6.488	6.861*	6.130	6.259	6.527*	6.600*
	(1.95)	(1.99)	(1.92)	(2.12)	(1.93)	(1.94)	(1.98)	(2.01)
N	11730	11730	11730	11730	11730	11730	11730	11730
Adj R^2	0.6375	0.5874	0.6221	0.6260	0.6218	0.5922	0.6224	0.5942
BIC	113294	114813	113783	113659	113791	114675	113773	114616
BIC Rank	1	8	4	2	5	7	3	6

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.030***	1.033***	1.034**	1.048***	1.027**	1.041**	1.051***	1.054***
	(3.33)	(3.33)	(3.26)	(3.32)	(3.24)	(3.14)	(3.38)	(3.38)
NonGAAPE	2.216	2.244	1.386	1.440	1.391	1.545	0.533	0.689
	(1.02)	(1.04)	(0.87)	(0.95)	(0.88)	(0.99)	(0.33)	(0.43)
DIFF	-0.529	0.108	-0.945	4.235*	-1.013	1.675	1.363	1.498
	(-0.98)	(0.15)	(-0.35)	(2.38)	(-0.47)	(0.41)	(0.86)	(0.97)
EL	-1.165	-1.540	-1.546	-1.223	-1.365	-2.190	-1.549	-1.903
	(-0.26)	(-0.35)	(-0.35)	(-0.28)	(-0.32)	(-0.56)	(-0.36)	(-0.44)
EL*BV	0.655	0.676	0.631	0.601	0.607	0.621	0.633	0.643
	(1.66)	(1.71)	(1.65)	(1.55)	(1.58)	(1.56)	(1.68)	(1.70)
EL*NonGAAPE	-5.702	-5.742	-4.348*	-4.503**	-4.404*	-4.189*	-3.705*	-3.681*
	(-1.62)	(-1.63)	(-2.41)	(-2.60)	(-2.45)	(-2.33)	(-1.99)	(-2.01)
EL*DIFF	-2.163	-2.344	0.385	0.881	-4.838	-6.276	-3.276	-2.955
	(-1.96)	(-1.81)	(0.09)	(0.42)	(-1.66)	(-1.14)	(-1.80)	(-1.68)
Intercept	7.968*	8.010*	8.313*	8.255*	7.872*	8.280**	8.232*	8.331*
	(2.14)	(2.17)	(2.21)	(2.27)	(2.17)	(2.59)	(2.24)	(2.31)
N	3080	3080	3080	3080	3080	3080	3080	3080
Adj R^2	0.6274	0.6244	0.6225	0.6272	0.6252	0.6209	0.6276	0.6276
BIC	28450	28474	28490	28452	28468	28503	28448	28448
BIC Rank	3	6	7	4	5	8	1	1

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	1.115***	1.095***	1.300***	1.337***	1.309***	1.293***	1.303***	1.313***
	(5.41)	(5.30)	(5.95)	(6.31)	(5.83)	(5.34)	(6.03)	(6.28)
NonGAAPE	12.043***	13.295***	1.161	-0.891	0.566	-0.116	0.729	0.232
	(4.27)	(4.78)	(0.35)	(-0.54)	(0.18)	(-0.07)	(0.22)	(0.12)
DIFF	-4.926***	-3.668***	5.716	3.838	1.101	-2.933	0.175	-0.385
	(-7.60)	(-3.36)	(1.67)	(1.28)	(0.34)	(-0.94)	(0.06)	(-0.25)
EL	6.291*	6.554*	5.993*	5.686*	4.642	4.247	5.784*	5.777*
	(2.44)	(2.56)	(2.19)	(2.08)	(1.88)	(1.94)	(2.15)	(2.15)
EL*BV	-0.364	-0.353	-0.503	-0.522	-0.518*	-0.544*	-0.528	-0.528*
	(-1.47)	(-1.43)	(-1.84)	(-1.86)	(-2.08)	(-2.12)	(-1.94)	(-1.98)
EL*NonGAAPE	-5.749	-6.768	0.388	2.198	0.957	1.444	2.147	2.554**
	(-1.65)	(-1.93)	(0.48)	(1.18)	(0.99)	(1.00)	(1.70)	(2.81)
EL*DIFF	3.494	2.263	-3.714	-0.545	-4.389**	-5.396	2.021*	2.480**
	(1.24)	(1.01)	(-1.75)	(-0.16)	(-2.65)	(-1.37)	(2.26)	(2.58)
Intercept	5.326*	5.089*	5.976*	6.191**	6.292**	5.796**	6.289**	6.248**
	(2.28)	(2.18)	(2.52)	(2.61)	(2.71)	(2.93)	(2.69)	(2.66)
N	6678	6678	6678	6678	6678	6678	6678	6678
Adj R^2	0.5194	0.5223	0.4702	0.4681	0.4743	0.4817	0.4683	0.4690
BIC	57648	57607	58299	58325	58247	58151	58323	58313
BIC Rank	2	1	5	8	4	3	7	6

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm.

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. EL = 1 if e-loading quintile is 5 and 0 if e-loading quintile is 1. EL*BV = Interaction term of e-loading with book value of common equity per share. EL*NonGAAPE = Interaction term of e-loading with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. EL*DIFF = Interaction term of e-loading with the corresponding DIFF measure of DIFF1 and DIFF2.

In the post-GFC period, there appears to be a shift in investors' focus. While investors remain strongly focused on the book value of equity, IBES is also value relevant when exposure to low quality earnings is low. Similarly, GAAP earnings are incrementally value relevant in relation to IBES when exposure to low quality earnings is low. EL is marginally significant and positive in relation IBES, CORE and CF. The interaction terms are not statistically significant in relation to IBES and CORE. However, EL*BV and EL*DIFF are generally statistically significant in relation CE and CF. In relation to CE, the negative sign of EL*BV and EL*DIFF indicates that investors decrease the emphasis they place on the book value of equity and GAAP earnings when exposure to low quality earnings is high. In contrast, investors increase the emphasis they place on GAAP and non-GAAP earnings when exposure to low quality earnings is high in relation to CF.

Overall, the results show some evidence of a shift in investors' focus across the three period windows. In the pre-GFC and GFC periods, investors are more focused on the book value of equity. In the post-GFC period, however, investors appear to give comparatively greater emphasis to IBES earnings. Using BIC to evaluate model performance, IBES performs best in the pre- and post-GFC period. However, CF performs best during the GFC.

6.2.4.2 Model Estimation by Low and High e-loading

The estimation results, by low and high e-loading, for firms not included in the S&P 500 are presented in Table 6.10. In the pre-GFC period, BV is strongly significant in all models. All non-GAAP earnings are statistically significant and negative at the high level of exposure to low quality earnings in Model 1 and Model 2. The results for DIFF1 in Panel A exhibit a similar pattern. DIFF2 is statistically significant and negative at the high level of exposure to low quality earnings in relation to IBES and CF but it is statistically significant and positive when exposure to low quality earnings is low in relation to CORE. These results are consistent with investors discounting the share price of firms with a high level exposure to low quality earnings.

In the GFC period, CORE, CE and CF are statistically significant and negative at the high level of exposure to low quality earnings in both Model 1 and Model 2. DIFF1 is statistically significant and negative in relation to IBES, CE and CF when exposure to low quality earnings is high. DIFF2 is statistically significant and positive at both levels of exposure to low quality earnings in relation to CORE but it is statistically significant and negative at the high level of exposure to low quality earnings in relation to IBES. It appears that firm value is largely driven by the book value of equity. Furthermore, the results are generally consistent with investors discounting firm value for low quality earnings.

In the post-GFC period, CORE, CE and CF are not statistically significant but IBES is statistically significant and positive at both levels of exposure to low quality earnings in Model 1 and Model 2. DIFF1 and DIFF2 are statistically significant and negative when exposure to low quality earnings is low in relation to IBES. DIFF2 is also statistically significant and positive when exposure to low quality earnings is high in relation to CORE, however, it is statistically significant and negative when exposure to low quality earnings is high in relation to CE.

Table 6.10: Ohlson Model: Non-S&P 500 Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low One-Factor e-loading Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	EL Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.656***	3.167	3.483	6.504	5865	0.5824
	High	1.228***	-7.994*	-25.058***	9.751***	5865	0.6711
CORE	Low	1.628***	3.406	7.709	6.488	5865	0.5834
	High	1.387***	-17.779***	-5.579	7.946***	5865	0.6449
CE	Low	1.605***	3.304	-1.645	6.130	5865	0.5864
	High	1.510***	-18.123***	-14.282**	8.873***	5865	0.6425
CF	Low	1.652***	2.955	3.366	6.527*	5865	0.5835
	High	1.399***	-19.374***	-16.937***	9.157***	5865	0.6453

Panel B: Pre-GFC - Model 2

	EL Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.652***	3.489	3.973	6.587*	5865	0.5849
	High	1.559***	-8.345**	-15.120*	6.801***	5865	0.5864
CORE	Low	1.578***	3.724	18.422*	6.861*	5865	0.5941
	High	1.359***	-17.089**	2.659	7.533***	5865	0.6445
CE	Low	1.613***	3.705	0.424	6.259	5865	0.5861
	High	1.705***	-13.391**	-6.734	7.452***	5865	0.5936
CF	Low	1.649***	3.267	3.618	6.600*	5865	0.5855
	High	1.529***	-15.275**	-12.106**	7.471***	5865	0.5973

Panel C: GFC - Model 1

	EL Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.030***	2.216	-0.529	7.968*	1540	0.5336
	High	1.686***	-3.486	-2.692**	6.803**	1540	0.6954
CORE	Low	1.034**	1.386	-0.945	8.313*	1540	0.5220
	High	1.665***	-2.962***	-0.560	6.767**	1540	0.6953
CE	Low	1.027**	1.391	-1.013	7.872*	1540	0.5251
	High	1.634***	-3.014***	-5.852**	6.507**	1540	0.6978
CF	Low	1.051***	0.533	1.363	8.232*	1540	0.5282
	High	1.684***	-3.172***	-1.913*	6.682**	1540	0.6996

Panel D: GFC - Model 2

	EL Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.033***	2.244	0.108	8.010*	1540	0.5330
	High	1.709***	-3.498	-2.236*	6.470**	1540	0.6906
CORE	Low	1.048***	1.440	4.235*	8.255*	1540	0.5276
	High	1.648***	-3.064***	5.116***	7.033**	1540	0.6994
CE	Low	1.041**	1.545	1.675	8.280**	1540	0.5252
	High	1.662***	-2.644**	-4.601	6.091**	1540	0.6903
CF	Low	1.054***	0.689	1.498	8.331*	1540	0.5319
	High	1.696***	-2.991***	-1.456	6.429**	1540	0.6970

Panel E: Post-GFC - Model 1

	EL Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.115***	12.043***	-4.926***	5.326*	3339	0.6311
	High	0.751***	6.294*	-1.432	11.617***	3339	0.3148
CORE	Low	1.300***	1.161	5.716	5.976*	3339	0.5849
	High	0.798***	1.549	2.002	11.970***	3339	0.2597
CE	Low	1.309***	0.566	1.101	6.292**	3339	0.5768
	High	0.791***	1.523	-3.288	10.934***	3339	0.2859
CF	Low	1.303***	0.729	0.175	6.289**	3339	0.5782
	High	0.775***	2.876	2.196	12.073***	3339	0.2665

Panel F: Post-GFC - Model 2

	EL Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.095***	13.295***	-3.668***	5.089*	3339	0.6354
	High	0.742***	6.527*	-1.405	11.643***	3339	0.3153
CORE	Low	1.337***	-0.891	3.838	6.191**	3339	0.5803
	High	0.814***	1.307	3.293*	11.877***	3339	0.2622
CE	Low	1.293***	-0.116	-2.933	5.796**	3339	0.5780
	High	0.748***	1.328	-8.329*	10.043***	3339	0.3046
CF	Low	1.313***	0.232	-0.385	6.248**	3339	0.5785
	High	0.786***	2.786	2.095	12.025***	3339	0.2681

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm.

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. EL quintile is Low if e-loading quintile is 1 and High if e-loading quintile is 5. Low and High indicate low exposure to low quality earnings and high exposure to low quality earnings, respectively.

There is an observable shift in investors' focus in the post-GFC period. It appears that investors focus predominantly on the book value of equity after the GFC. Furthermore, this emphasis on the book value of equity is consistently greater when exposure to low quality earnings is low relative to when it is high; the magnitude of BV is consistently higher at low level, in comparison to high level, exposure to low quality earnings.

The results for the one-factor e-loading are consistent with expectations. Also, this suggests that the results for the S&P 500 sample are due to size. Generally, the results in Table 6.10 are consistent with investors discounting the share price of firms with poor quality earnings. The results are also similar to the non-financial sector sample. It appears that investors give less emphasis to earnings information in the post-GFC period in comparison to the pre-GFC period.

6.3 DISCUSSION

Recall that a lower e-loading indicates lower exposure, and lower sensitivity, to poor earnings quality. I argue that when GAAP earnings quality is high (i.e., low e-loading), investors may place greater emphasis on GAAP earnings. Therefore, I expect, other things being equal, when the e-loading is low (i.e., low exposure to low quality earnings), GAAP earnings may be value relevant. Conversely, when the e-loading is high, indicating greater sensitivity to poor quality earnings, investors may penalise the firm for increased information risk.

Re-estimating the models by low and high e-loading quintiles provides both complementary and additional insights into the effects of exposure to low quality earnings. This is particularly evident when comparing the results of the base analyses in Chapter 3 and this chapter; the summary tables of Chapter 3, Table 3.4, and Table 6.2 show the impact that exposure to low quality earnings has on the results by models and samples.

In the financial sector sample, the results of the pre-GFC and GFC periods show that when exposure to low quality earnings is low, non-GAAP earnings are not significant. Conversely, when exposure to low quality earnings is high, non-GAAP earnings are statistically significant. The results also show some evidence that GAAP earnings generally have incremental value relevance, however, this varies with different non-GAAP earnings measure. Interestingly, investors are focused predominantly on book value of equity when exposure to low quality earnings is low during the GFC. On the other hand, non-GAAP earnings are generally significant when exposure to low quality earnings is high. An explanation for this is when exposure to low quality earnings is high, investors seek alternative sources of information.

The results for the post-GFC period suggest a change in investors' emphasis; non-GAAP earnings are statistically significant across both levels of e-loading in contrast to the GFC period. The results for GAAP earnings are mixed, i.e., after the GFC, investors appear to place greater emphasis on alternative sources of information. However, there is evidence that GAAP earnings have incremental value relevance. This suggests that for a given level of earnings quality, investors may find GAAP and non-GAAP earnings complementary. Interestingly, there is no evidence investors discount the share price of firm with high exposure to low quality earnings. This may be due to the relatively homogenous sample of financial firms.

In the non-financial sector and non-S&P 500 samples, the results are somewhat similar in the pre-GFC and GFC periods. When exposure to low quality earnings is relatively high, the statistically significant coefficients for non-GAAP earnings are negative. Additionally, the results also show that GAAP earnings have incremental value relevance but the coefficients are also negative when exposure to low quality earnings is high. These results are consistent with investors seeking information from alternative sources and also discounting firm value for high exposure to low quality earnings. Low earnings quality suggests greater information risk, therefore, these results are consistent with prior studies that find investors price information risk (Easley and O'Hara, 2004).

The results also show a shift in investors' focus. While GAAP earnings have incremental value relevance, it appears that a major impact of the GFC was to shift investors' emphasis to non-GAAP earnings measures for firms in the financial sector and S&P 500 samples. Interestingly, in the post-GFC period, investors appear to focus predominantly on the book value of equity and give almost no emphasis to non-GAAP earnings except IBES in the non-financial sector and non-S&P 500 samples.

The results for the S&P 500 sample where GAAP and non-GAAP earnings are positively associated with share price when exposure to low quality earnings is high are notable. However, an explanation for these results is the sample itself, which comprises large firms that are relatively homogenous in terms of exposure to low quality earnings. That is, the risk of exposure to low quality earnings may be high for firms in the highest quintile within the sample. Nevertheless, this risk may be low relative to other firms in the market, i.e., firms that are not included in the S&P 500 index. Therefore, there may be a size effect that biases the observed results.

6.4 SUMMARY AND CONCLUSIONS

In this chapter, I address *RQ3* and investigate the impact of earnings quality on the value relevance of GAAP and non-GAAP earnings measures and whether earnings quality may explain my findings in Chapter 3. Specifically, I examine whether varying levels of earnings quality impact on the value relevance of non-GAAP earnings and on the incremental value relevance of GAAP earnings. I also investigate the impact of the GFC on investors' focus on GAAP and non-GAAP earnings after controlling for earnings quality.

I find similar results for my non-financial firms and non-S&P 500 samples. My results show that the GFC has an impact on the emphasis investors place on GAAP and non-GAAP earnings. The evidence suggests that an impact of the GFC was to shift investors' focus to the book value of equity. In the post-GFC period, investors appear to give little emphasis to both GAAP and non-GAAP earnings. Nevertheless, GAAP earnings appear to have incremental value relevance in relation to IBES. I also find evidence that investors discount firm value for low quality earnings in the pre-GFC and GFC periods.

The financial sector and S&P 500 samples yield some interesting results. High levels of exposure to low quality earnings do not appear to impact on the value relevance of both GAAP and non-GAAP earnings. An explanation for these results may be the relative homogeneity of the samples.

Overall, I find evidence that the GFC had an impact on the value relevance of both GAAP and non-GAAP earnings. I also find evidence of a shift in investors' emphasis on these alternative measures of earnings as a result of the GFC.

CHAPTER 7

CONSERVATISM

7.1 INTRODUCTION

In this chapter, I investigate the impact of conservatism on the value relevance of GAAP and non-GAAP earnings to address *RQ4*. I examine whether the GFC and the level of conservatism, both unconditional and conditional, are systematically associated with the emphasis investors place on GAAP and non-GAAP earnings.

In Chapter 3, I find evidence that investors place greater emphasis on GAAP earnings, which are generally closer to, or less than, I/B/E/S earnings in the non-financial sector sample before and during the GFC. In subsequent tests on the impact of information asymmetry in Chapter 5, I find evidence that investors focus on GAAP earnings, which are generally closer to, or less than, non-GAAP earnings at a high level of information asymmetry in the non-financial sector and non-S&P 500 samples in the pre-GFC period. This result, however, does not hold at a low level of information asymmetry in the same period. They show a shift in investors' emphasis in the post-GFC period in these samples. Furthermore, DIFF1 and DIFF2 are negatively related to share price. As DIFF variables are defined as GAAP less non-GAAP earnings, lower values of the DIFF variables indicate GAAP earnings that are closer to, or less than, non-GAAP earnings. I also find similar results for these two samples in my tests on the impact of earnings quality in Chapter 6.

In this chapter, I investigate if there is a systematic association in the value relevance of GAAP and non-GAAP earnings across different levels of conservatism. Specifically, I use two alternative measures of conservatism – market-to-book (MTB) ratio for unconditional conservatism and asymmetric timeliness (AT) measure for conditional conservatism. Consistent with previous chapters, I adopt two alternative approaches to investigate the impact of each measure of conservatism. First, I assign firms into quintiles based on each of these measures. Also, I focus only on the extreme quintiles of my conservatism measures, where systematic differences due to conservatism are more likely to be evident. The first approach examines the main effects and interaction terms in the model. I include a dummy variable, CON, where 1 indicates firms with high conservatism and 0 indicates firms with low conservatism. Accordingly, CON is based on the MTB ratio under unconditional conservatism and based on the AT measure under conditional conservatism. In the second approach, I assign firms into quintiles based on the corresponding measure of conservatism. I re-estimate my Ohlson models separately for firms in the high or low quintiles of the corresponding measure of conservatism for each sample in my study.

In summary, IBES and CORE generally produce lower values of earnings relative to GAAP earnings. Consequently, there may be a confirmation effect where the level of conservatism in GAAP earnings reflects investors' expectations, which biases against finding significant results. Conversely, if investors find GAAP earnings to be more credible and reliable, I expect GAAP earnings to be incrementally value relevant and positively associated with firm value. This implies a positive association between DIFF1 and DIFF2 and share price. Recall that DIFF1 and DIFF2 measure the difference between GAAP and non-GAAP earnings. Therefore, significant and positive DIFF1 and DIFF2 indicate investors favour GAAP earnings where they are not comparatively lower (i.e., less conservative) than non-GAAP earnings, which is consistent with investors finding GAAP earnings more credible and reliable. Additionally, there is relatively greater uncertainty in the market in the GFC and post-GFC period in comparison to the pre-GFC period. Therefore, I expect GAAP earnings to have incremental value relevance relative to non-GAAP earnings in the GFC and post-GFC periods in comparison to the pre-GFC period. Also, consistent with prior chapters, references to the value relevance of non-GAAP earnings denote comparative value relevance between these earnings, i.e., IBES, CORE, CE and CF, and references to DIFF1, DIFF2 and GAAP earnings denote incremental value relevance between GAAP and non-GAAP earnings.

Also, the type of sample may bias against finding significant results. For example, firms in the financial sector are significantly affected by the GFC with significant corrections in the book value of assets that may have been overstated in the period leading up to the GFC. It is a relatively homogenous sample of firms within the same sector that are generally more highly regulated. Therefore, sorting financial firms, which experience similar impact on earnings and book value of assets, into quintiles based on conservatism means that the relative level of conservatism will be small between quintiles. This may bias against finding significant results in the test variables.

I find evidence that GAAP earnings are incrementally value relevant. However, the measure of conservatism and the sample selection impact on the results. Table 7.1 presents a summary of the two highest ranked models under unconditional conservatism, with main effects and interaction terms, for all samples and periods that I test in this chapter.

IBES models generally outperform other models in the non-financial, S&P 500 and non-S&P 500 samples, particularly in the post-GFC period. The results are mixed in the financial sector sample.

Table 7.1: Summary of Two Highest Ranked Models for All Samples with Market-to-Book Ratio Dummy and Interaction Terms (Comparison of Model Performance using BIC)

$$\text{Model 1: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 Con_{it} + \beta_5 Con * BV_{it} + \beta_6 Con * NonGAAPE_{it} + \beta_7 Con * DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 Con_{it} + \beta_5 Con * BV_{it} + \beta_6 Con * NonGAAPE_{it} + \beta_7 Con * DIFF2_{it} + \varepsilon_{it}$$

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Financial								
- Pre-GFC	1 (4)	2 (2)						
- GFC			1 (3)		1 (3)			
- Post-GFC						1 (7)		2 (16)
Non-Financial								
- Pre-GFC	1 (271)	2 (266)						
- GFC							1 (1)	2 (15)
- Post-GFC	2 (783)	1 (2)						
S&P 500								
- Pre-GFC	2 (170)	1 (20)						
- GFC	2 (1)						1 (23)	
- Post-GFC	1 (55)	2 (17)						
Non-S&P 500								
- Pre-GFC							1 (122)	1 (122)
- GFC	2 (2)	1 (18)						
- Post-GFC	1 (38)	2 (33)						

Models ranked 1 and 2 are shown. The absolute difference in BIC values between the model and the next lower ranked model is shown in parentheses. The different grades of evidence corresponding to minimum BIC difference according to Raftery (1995) are:

Minimum BIC Difference of 0: Weak
Minimum BIC Difference of 2: Positive
Minimum BIC Difference of 6: Strong
Minimum BIC Difference of 10: Very Strong

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON = 1 if market-to-book (MTB) ratio quintile is 5 and 0 if MTB ratio quintile is 1. CON*BV = Interaction term of MTB ratio with book value of common equity per share. CON*NonGAAPE = Interaction term of MTB ratio with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. CON*DIFF = Interaction term of MTB ratio with the corresponding DIFF measure of DIFF1 and DIFF2.

Table 7.2 presents a summary of the two highest ranked models under conditional conservatism, with main effects and interaction terms, for all samples and periods that I test in this chapter. The results appear stronger that IBES models generally outperform other models across all samples. The notable exceptions are in the financial sector and S&P 500 samples in the pre-GFC period.

Table 7.2: Summary of Two Highest Ranked Models for All Samples with Asymmetric Timeliness Measure Dummy and Interaction Terms (Comparison of Model Performance using BIC)

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 Con_{it}$
$+ \beta_5 Con * BV_{it} + \beta_6 Con * NonGAAPE_{it} + \beta_7 Con * DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 Con_{it}$
$+ \beta_5 Con * BV_{it} + \beta_6 Con * NonGAAPE_{it} + \beta_7 Con * DIFF2_{it} + \varepsilon_{it}$

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Financial								
- Pre-GFC			1				2	
			(24)				(2)	
- GFC	2	1						
	(1)	(3)						
- Post-GFC	1		2					
	(4)		(8)					
Non-Financial								
- Pre-GFC	1	2						
	(122)	(1,638)						
- GFC	1	2						
	(8)	(219)						
- Post-GFC	1	2						
	(35)	(1,479)						
S&P 500								
- Pre-GFC			2		1			
			(8)		(17)			
- GFC	1	2						
	(4)	(8)						
- Post-GFC	2	1						
	(188)	(27)						
Non-S&P 500								
- Pre-GFC	1	2						
	(161)	(2,275)						
- GFC	2	1						
	(136)	(23)						
- Post-GFC	1	2						
	(13)	(758)						

Models ranked 1 and 2 by their BIC are shown. The absolute difference in BIC values between the model and the next lower ranked model is shown in parentheses. The different grades of evidence corresponding to minimum BIC difference according to Raftery (1995) are:

Minimum BIC Difference of 0: Weak
Minimum BIC Difference of 2: Positive
Minimum BIC Difference of 6: Strong
Minimum BIC Difference of 10: Very Strong

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON = 1 if asymmetric timeliness (AT) measure quintile is 5 and 0 if AT measure quintile is 1. CON*BV = Interaction term of AT measure with book value of common equity per share. CON*NonGAAPE = Interaction term of AT measure with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. CON*DIFF = Interaction term of AT measure with the corresponding DIFF measure of DIFF1 and DIFF2.

Table 7.3 presents a summary of my Ohlson model regressions for each sample by period window and models under unconditional conservatism. This table highlights the key variables that are statistically significant at $p = 0.05$ or stronger. The negative sign of significant variables are indicated in brackets. The results show that investors are predominantly focused on the book value of equity. GAAP earnings are generally incrementally value relevant in the financial sector and S&P 500 samples. Additionally, in the financial sector sample, GAAP earnings is positively associated with share price when unconditional conservatism is low in the post-GFC period, which is consistent with investors finding GAAP earnings more credible and reliable during that period. The GFC appears to have a greater impact in the financial sector, non-financial sector and S&P 500 samples but less so in the non-S&P 500 sample. There is evidence of a shift in investors' focus due to the GFC. In the financial sector, investors shift their focus to both GAAP and non-GAAP earnings when unconditional conservatism is low but not when it is high in the post-GFC period. In the non-financial sector, they appear to generally shift their focus away from non-GAAP earnings. In contrast, investors appear to shift their focus to non-GAAP earnings, particularly when unconditional conservatism is low in the post-GFC period.

Table 7.3: Summary of Significant Key Variables for Multivariate OLS Regression Results by Sample, Models and High/Low Market-to-Book Ratio Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Financial Sector Sample

Pre-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		
	High	sig	sig		sig	sig	
CORE	Low	sig		sig	sig		sig
	High	sig	sig	sig	sig	sig	sig
CE	Low	sig			sig		
	High	sig	sig	sig	sig	sig	sig
CF	Low	sig			sig		
	High	sig	sig	sig	sig	sig	sig

GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig		sig (-)	sig		sig (-)
	High	sig	sig	sig	sig	sig	sig
CORE	Low	sig		sig (-)	sig		sig (-)
	High	sig	sig		sig	sig	
CE	Low	sig	sig (-)	sig (-)	sig	sig (-)	sig (-)
	High	sig	sig	sig	sig	sig	
CF	Low	sig		sig (-)	sig		
	High	sig	sig	sig	sig		

Post-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig	sig	sig	sig	sig
	High	sig			sig		
CORE	Low	sig	sig	sig	sig	sig	sig
	High	sig			sig		
CE	Low	sig	sig	sig	sig	sig	
	High	sig			sig	sig	sig
CF	Low	sig	sig	sig	sig	sig	sig
	High	sig			sig		sig

Panel B: Non-Financial Sector Sample

Pre-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		
	High	sig		sig (-)	sig		sig (-)
CORE	Low	sig			sig		
	High	sig			sig		sig
CE	Low	sig			sig		sig (-)
	High	sig			sig		
CF	Low	sig			sig		
	High	sig			sig		

GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	sig
	High	sig			sig		
CORE	Low	sig	sig		sig	sig	sig
	High	sig			sig		
CE	Low	sig	sig		sig	sig	
	High	sig			sig		
CF	Low	sig	sig	sig	sig		sig
	High	sig			sig		

Post-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low			sig (-)			sig (-)
	High	sig	sig		sig	sig	
CORE	Low	sig			sig		
	High	sig		sig	sig		
CE	Low	sig					sig (-)
	High	sig			sig		
CF	Low	sig			sig		
	High	sig			sig		

Panel C: S&P 500 Sample

Pre-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	sig (-)
	High	sig	sig		sig	sig	
CORE	Low	sig	sig	sig	sig		
	High	sig	sig		sig	sig	
CE	Low	sig	sig	sig	sig		
	High	sig	sig	sig	sig	sig	sig
CF	Low	sig	sig	sig	sig		
	High	sig	sig	sig	sig	sig	sig

GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		
	High	sig	sig		sig	sig	
CORE	Low	sig			sig		
	High	sig	sig	sig	sig	sig	
CE	Low	sig			sig		
	High	sig	sig	sig	sig	sig	
CF	Low	sig			sig		
	High	sig	sig	sig	sig		sig

Post-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	
	High	sig	sig		sig	sig	
CORE	Low	sig	sig		sig	sig	
	High	sig	sig		sig	sig	
CE	Low	sig	sig			sig	
	High	sig	sig		sig	sig	
CF	Low	sig	sig	sig	sig	sig	sig
	High	sig	sig	sig	sig	sig	sig

Panel D: Non-S&P 500 Sample

Pre-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		
	High	sig			sig		
CORE	Low	sig		sig	sig		
	High	sig			sig		sig
CE	Low	sig			sig		
	High	sig			sig		
CF	Low	sig			sig		
	High	sig			sig		

GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig	sig	sig	sig	
	High	sig			sig		
CORE	Low	sig			sig	sig	
	High	sig			sig		
CE	Low	sig			sig	sig	
	High	sig			sig		
CF	Low	sig			sig		
	High	sig			sig		

Post-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		
	High	sig			sig		
CORE	Low	sig			sig		
	High	sig		sig	sig		
CE	Low	sig			sig		
	High	sig			sig		
CF	Low	sig			sig		
	High	sig			sig		

sig indicates the variable is statistically significant and positive at p = 0.05 or stronger. sig (-) indicates the variable is statistically significant and negative at p = 0.05 or stronger. The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON quintile is Low if market-to-book (MTB) ratio quintile is 1 and High if MTB ratio quintile is 5. Low and High indicate low unconditional conservatism and high unconditional conservatism, respectively.

Table 7.4 presents a summary of my Ohlson model regressions for each sample by period window and models under conditional conservatism. This table highlights the key variables that are statistically significant at p = 0.05 or stronger. The negative sign of significant variables are indicated in brackets. The results show that investors are predominantly focused on the book value of equity, which is consistent with my results under unconditional conservatism. GAAP earnings are generally incrementally value relevant across all samples but the results are mixed in relation to the period windows. In the non-S&P 500 sample, GAAP earnings are generally not incrementally value relevant in the GFC and post-GFC period. In contrast, there appears to be a shift in investors' focus towards GAAP and non-GAAP earnings in the post-GFC period in comparison to the pre-GFC and GFC periods in the financial sector sample. There is evidence of a shift in investors' focus due to the GFC. The impact of the GFC on investors' focus is relatively more evident in the financial sector and non-S&P 500 samples. In the former, investors shift their focus to both GAAP and non-GAAP earnings when conditional conservatism is high but not when it is low in the post-GFC period in comparison to the pre-GFC period. In the latter, investors generally shift their focus to non-GAAP earnings when conditional conservatism is high but not when it is low in the post-GFC period in comparison to the pre-GFC period.

Overall, I find GAAP earnings are generally incrementally value relevant under both unconditional conservatism and conditional conservatism in my financial sector, non-financial sector and non-S&P 500 samples in relation to all non-GAAP earnings. In the S&P 500 sample, however, GAAP earnings generally are not incrementally value relevant before, during and after the GFC in relation to IBES. I also find evidence of systematic differences in investors' focus in my samples in the pre-GFC, GFC and post-GFC periods. In the post-GFC period, I find evidence of investors' emphasis on GAAP earnings consistent with GAAP earnings being more credible and reliable.

Table 7.4: Summary of Significant Key Variables for Multivariate OLS Regression Results by Sample, Models and High/Low Asymmetric Timeliness Measure Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Financial Sector Sample

Pre-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		
	High	sig			sig		
CORE	Low	sig	sig		sig		
	High	sig			sig		
CE	Low	sig		sig	sig		
	High	sig			sig		
CF	Low	sig			sig		
	High	sig			sig		

GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	
	High	sig			sig		
CORE	Low	sig		sig	sig		sig
	High	sig		sig	sig		sig
CE	Low	sig			sig		
	High	sig			sig		
CF	Low	sig			sig		
	High	sig			sig		

Post-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		
	High	sig	sig	sig	sig	sig	sig
CORE	Low	sig			sig		
	High	sig	sig	sig	sig	sig	
CE	Low	sig			sig		
	High	sig	sig	sig	sig	sig	sig
CF	Low	sig			sig		
	High	sig	sig	sig	sig	sig	sig

Panel B: Non-Financial Sector Sample

Pre-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	
	High	sig	sig	sig (-)	sig	sig	sig (-)
CORE	Low	sig	sig	sig	sig		
	High	sig			sig		
CE	Low	sig	sig	sig	sig		sig
	High	sig			sig		
CF	Low	sig	sig	sig	sig		
	High	sig			sig		

GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	
	High	sig	sig	sig	sig	sig	sig
CORE	Low	sig			sig	sig	
	High	sig	sig		sig	sig	sig
CE	Low	sig			sig	sig	sig
	High	sig	sig	sig	sig	sig	
CF	Low	sig		sig	sig	sig	sig
	High	sig	sig	sig	sig	sig	sig

Post-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig	sig (-)	sig	sig	sig (-)
	High	sig	sig		sig	sig	
CORE	Low	sig			sig		
	High	sig	sig	sig	sig	sig	
CE	Low	sig			sig		
	High	sig	sig	sig	sig	sig	
CF	Low	sig			sig		
	High	sig	sig	sig	sig	sig	sig

Panel C: S&P 500 Sample

Pre-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig			sig		
	High	sig	sig	sig	sig	sig	
CORE	Low	sig		sig	sig		sig
	High	sig	sig	sig	sig	sig	sig (-)
CE	Low	sig			sig		sig
	High	sig	sig	sig	sig	sig	sig
CF	Low	sig			sig		
	High	sig	sig	sig	sig	sig	sig

GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig	sig (-)	sig	sig	
	High	sig		sig	sig		sig
CORE	Low	sig			sig	sig	
	High	sig	sig	sig	sig	sig	sig
CE	Low	sig			sig	sig	sig
	High	sig	sig	sig	sig	sig	
CF	Low	sig			sig	sig	sig
	High	sig	sig	sig	sig	sig	sig

Post-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	
	High	sig	sig		sig	sig	
CORE	Low	sig	sig		sig	sig	
	High	sig	sig		sig	sig	
CE	Low	sig	sig	sig	sig	sig	
	High	sig	sig	sig	sig	sig	
CF	Low	sig	sig	sig	sig	sig	sig
	High	sig	sig	sig	sig	sig	sig

Panel D: Non-S&P 500 Sample

Pre-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	
	High	sig	sig	sig (-)	sig	sig	sig (-)
CORE	Low	sig	sig	sig	sig	sig	
	High	sig			sig		
CE	Low	sig	sig	sig	sig		sig
	High	sig			sig		
CF	Low	sig	sig	sig	sig	sig	
	High	sig			sig		

GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	
	High	sig			sig		
CORE	Low	sig			sig		sig
	High	sig			sig		sig
CE	Low	sig			sig		
	High	sig			sig	sig	
CF	Low	sig			sig	sig	
	High	sig			sig		sig

Post-GFC

		Model 1			Model 2		
	CON Quintile	BV	NonGAAPE	DIFF1	BV	NonGAAPE	DIFF2
IBES	Low	sig	sig		sig	sig	
	High	sig	sig		sig	sig	
CORE	Low	sig			sig		
	High	sig	sig		sig		
CE	Low	sig			sig		
	High	sig	sig		sig		sig (-)
CF	Low	sig			sig		
	High	sig	sig	sig	sig		

sig indicates the variable is statistically significant and positive at p = 0.05 or stronger. sig (-) indicates the variable is statistically significant and negative at p = 0.05 or stronger. The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON quintile is Low if asymmetric timeliness (AT) measure quintile is 1 and High if AT measure quintile is 5. Low and High indicate low conditional conservatism and high conditional conservatism, respectively.

7.2 RESULTS

Consistent with previous chapters, the corresponding NonGAAPE measures in Equations 2.7 and 2.8 are IBES, CORE, CE and CF in the tables. The corresponding DIFF measures are DIFF1 and DIFF2 for Equation 2.7 (denoted as Model 1 in tables) and Equation 2.8 (denoted as Model 2 in tables), respectively. The results of the analyses under unconditional conservatism are presented in Table 7.5 through to Table 7.12 and those under conditional conservatism are presented in Table 7.13 through to Table 7.20.[24]

7.2.1 Unconditional conservatism - Market-to-Book Ratio

7.2.1.1 Financial Sector Sample

7.2.1.1.1 Model Estimation with Main Effects and Interaction Terms

Table 7.5 shows the estimation results of unconditional conservatism models with main effects and interaction variables for the financial sector sample. All models are statistically significant across all period windows.

In the pre-GFC period, BV is strongly significant in all models, however, NonGAAPE is not statistically significant in all models. DIFF is only incrementally value relevant in relation to CORE. CON is not statistically significant. In contrast, all interaction terms are statistically significant and positive except for CON*DIFF in relation to IBES. These results show that in the pre-GFC period, investors are focused generally on the book value of equity when valuing firms. However, when unconditional conservatism is high, investors place increased emphasis on both GAAP and non-GAAP earnings. Based on BIC, IBES models outperform the other models.

During the GFC, there is an observable shift in investors' focus. While BV remains strongly significant in all models, DIFF is also statistically significant and negative in all models except CF Model 2. CE is marginally significant and negative but IBES, CORE and CF are not statistically significant.

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[24] Similar to previous chapters, I re-estimate my models in the GFC window clustering on a single dimension - by firm and by time (fiscal quarters). While there are few individual differences in the results across all samples, the substance of the inferences and interpretations discussed in this chapter remain the same.

Table 7.5: Ohlson Model: Financial Sector Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with Market-to-Book Ratio Dummy and Interaction Terms as Controls

$$\text{Model 1: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 Con_{it} + \beta_5 Con * BV_{it} + \beta_6 Con * NonGAAPE_{it} + \beta_7 Con * DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 Con_{it} + \beta_5 Con * BV_{it} + \beta_6 Con * NonGAAPE_{it} + \beta_7 Con * DIFF2_{it} + \varepsilon_{it}$$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.529^{***}	0.528^{***}	0.523^{***}	0.539^{***}	0.537^{***}	0.530^{***}	0.529^{***}	0.532^{***}
	(8.94)	(10.61)	(9.31)	(12.80)	(7.90)	(9.86)	(8.67)	(10.66)
NonGAAPE	2.345	3.060	1.433	1.435	2.008	2.648	2.017	2.657
	(1.12)	(1.84)	(0.71)	(1.05)	(1.00)	(1.64)	(0.96)	(1.65)
DIFF	1.347	2.152	5.253^{**}	7.366^{***}	1.049	3.656	2.115	2.730
	(0.61)	(1.24)	(2.95)	(5.91)	(0.29)	(1.31)	(0.98)	(1.69)
CON	3.124	3.513	2.656	3.075	3.085	2.950	2.806	3.179
	(0.77)	(0.87)	(0.65)	(0.76)	(0.74)	(0.72)	(0.69)	(0.79)
CON*BV	1.238^{***}	1.200^{***}	1.349^{***}	1.341^{***}	1.374^{***}	1.383^{***}	1.369^{***}	1.403^{***}
	(7.63)	(5.99)	(6.62)	(7.04)	(8.27)	(9.33)	(7.77)	(9.08)
CON*NonGAAPE	16.922^{***}	16.577^{***}	16.514^{***}	15.966^{***}	15.788^{***}	13.068^{***}	15.545^{***}	13.530^{***}
	(5.66)	(5.05)	(4.22)	(4.47)	(5.10)	(5.00)	(5.18)	(5.24)
CON*DIFF	7.088	0.474	11.931^{***}	7.785^{**}	20.240^{**}	8.512^{*}	15.238^{***}	13.189^{***}
	(1.12)	(0.07)	(4.41)	(2.96)	(3.04)	(2.04)	(5.02)	(5.06)
Intercept	15.018^{***}	14.709^{***}	15.276^{***}	14.883^{***}	14.889^{***}	14.965^{***}	15.107^{***}	14.786^{***}
	(4.22)	(4.15)	(4.22)	(4.18)	(4.18)	(4.22)	(4.24)	(4.17)
N	1700	1700	1700	1700	1700	1700	1700	1700
Adj R^2	0.8726	0.8728	0.8712	0.8716	0.8707	0.8695	0.8713	0.8705
BIC	15733	15737	15751	15739	15743	15752	15751	15754
BIC Rank	1	2	5	3	4	7	5	8

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.601^{***}	0.603^{***}	0.566^{***}	0.570^{***}	0.600^{***}	0.578^{***}	0.574^{***}	0.579^{***}
	(12.09)	(10.75)	(12.54)	(10.51)	(14.11)	(12.60)	(11.45)	(10.57)
NonGAAPE	-0.640	-0.270	-0.752	-0.471	-1.235^{*}	-0.621^{*}	-0.638	-0.369
	(-0.52)	(-0.23)	(-1.45)	(-0.91)	(-2.16)	(-2.28)	(-1.45)	(-0.91)
DIFF	-1.459^{*}	-1.290^{*}	-2.568^{**}	-2.320^{*}	-3.966^{*}	-11.357^{*}	-1.145^{*}	-0.892
	(-2.33)	(-2.34)	(-2.76)	(-2.28)	(-2.41)	(-2.13)	(-2.05)	(-1.68)
CON	8.292^{**}	8.698^{**}	8.210^{**}	8.910^{**}	8.956^{**}	9.716^{**}	8.829^{**}	9.723^{**}
	(2.80)	(2.80)	(2.69)	(2.89)	(3.00)	(3.01)	(2.98)	(3.08)
CON*BV	1.476^{***}	1.485^{***}	1.595^{***}	1.603^{***}	1.569^{***}	1.639^{***}	1.601^{***}	1.651^{***}
	(4.74)	(4.83)	(4.86)	(5.05)	(4.86)	(5.20)	(5.11)	(5.45)
CON*NonGAAPE	14.172^{**}	12.510^{*}	10.969^{**}	9.965^{*}	11.303^{**}	7.249^{*}	10.036^{*}	6.275
	(2.80)	(2.54)	(2.67)	(2.49)	(2.87)	(2.31)	(2.27)	(1.69)
CON*DIFF	8.441^{**}	5.443^{**}	11.685^{*}	2.795	14.466^{***}	17.490^{*}	11.125^{**}	7.416^{*}
	(2.69)	(2.82)	(2.24)	(1.69)	(3.59)	(2.48)	(2.74)	(2.28)
Intercept	4.225	4.053	5.289	4.916	4.552	4.448	4.712	4.557
	(1.68)	(1.57)	(1.94)	(1.76)	(1.75)	(1.63)	(1.73)	(1.63)
N	494	494	494	494	494	494	494	494
Adj R^2	0.8212	0.8177	0.8248	0.8198	0.8226	0.8213	0.8237	0.8185
BIC	4142	4152	4132	4146	4132	4142	4135	4143
BIC Rank	4	8	1	7	1	4	3	6

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.423***	0.427***	0.424***	0.427***	0.424***	0.427***	0.423***	0.427***
	(4.85)	(5.24)	(4.67)	(5.16)	(5.20)	(5.35)	(4.60)	(5.28)
NonGAAPE	4.541***	3.727***	4.148***	3.795***	3.902***	3.516***	3.511***	3.407***
	(5.89)	(6.28)	(5.50)	(5.64)	(7.10)	(7.69)	(6.35)	(8.94)
DIFF	2.620***	3.116***	2.583**	2.911***	2.099*	2.600	3.488***	3.492***
	(3.34)	(6.40)	(3.21)	(7.68)	(2.42)	(1.94)	(5.75)	(7.29)
CON	3.140	2.832	2.944	2.807	3.603	3.382	2.544	2.510
	(0.82)	(0.75)	(0.76)	(0.74)	(0.95)	(0.92)	(0.66)	(0.68)
CON*BV	2.199***	2.183***	2.272***	2.196***	2.318***	2.233***	2.268***	2.191***
	(11.80)	(12.10)	(12.95)	(13.10)	(12.96)	(13.62)	(13.12)	(13.28)
CON*NonGAAPE	1.739	4.299	1.002	4.153	0.258	5.303	0.839	4.065
	(0.40)	(0.91)	(0.22)	(0.96)	(0.05)	(1.35)	(0.18)	(0.98)
CON*DIFF	-5.937	3.130	-2.413	3.128	9.069	19.016*	2.157	5.211
	(-0.69)	(0.64)	(-0.31)	(0.56)	(1.12)	(2.50)	(0.51)	(1.32)
Intercept	7.110*	7.101*	7.226*	7.096*	7.023*	7.053*	7.434*	7.170*
	(2.10)	(2.13)	(2.10)	(2.11)	(2.18)	(2.18)	(2.17)	(2.20)
N	1158	1158	1158	1158	1158	1158	1158	1158
Adj R^2	0.7933	0.7910	0.7911	0.7914	0.7922	0.7974	0.7915	0.7948
BIC	9550	9563	9562	9554	9556	9527	9553	9534
BIC Rank	3	8	7	5	6	1	4	2

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON = 1 if market-to-book (MTB) ratio quintile is 5 and 0 if MTB ratio quintile is 1. CON*BV = Interaction term of MTB ratio with book value of common equity per share. CON*NonGAAPE = Interaction term of MTB ratio with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. CON*DIFF = Interaction term of MTB ratio with the corresponding DIFF measure of DIFF1 and DIFF2.

These results suggest that when unconditional conservatism is low, investors find GAAP earnings incrementally value relevant but negatively related to share price. Recall that unconditional conservatism is measured as the ratio of market value of equity to book value of equity. The negative sign of DIFF indicates that investors place greater emphasis on GAAP earnings, which are generally closer to, or less than, non-GAAP earnings when unconditional conservatism is low.[25] The interactions terms are generally statistically significant and positive in relation to both GAAP and non-GAAP earnings. When unconditional conservatism is high, investors place increased emphasis on non-GAAP and GAAP earnings. The change in the sign of the coefficients for the main effect and interaction term of GAAP and non-GAAP earning clearly indicates the

[25] Prior studies (Givoly *et al.*, 2007; Roychowdhury and Watts, 2007) suggest that unconditional conservatism may be negatively related to conditional conservatism. While I do not test conditional conservatism in this section, my results, showing low unconditional conservatism is related with more conservative GAAP earnings, imply they are consistent with these prior studies.

change in the emphasis that investors place on earnings at the different levels of unconditional conservatism. The earnings of firms with high unconditional conservatism are valued more positively by investors than firms with low unconditional conservatism. In relation to model performance, CORE Model 1 and CE Model 1 perform best of all the models based on BIC.

The results of the post-GFC period show a contrast in comparison to the results of the pre-GFC period. In the post-GFC period, BV and NonGAAPE are strongly significant and positive in all models. DIFF is also statistically significant and positive in all models except in relation to CE Model 2. CON, however, is not statistically significant. The interaction term, CON*BV, is strongly significant and positive but CON*NonGAAPE is not statistically significant in all models. CON*DIFF is only marginally significant in relation to CE Model 2. These results show that investors find GAAP earnings incrementally value relevant when unconditional conservatism is low. However, high unconditional conservatism does not appear to change the emphasis investors place on either GAAP or non-GAAP earnings. Based on BIC, CE Model 2 and CF Model 2 perform best of all the models tested.

7.2.1.1.2 Model Estimation by Low and High Unconditional Conservatism

Table 7.6 shows my estimation results, by low and high unconditional conservatism, for the financial sector sample. In both Panel A and Panel B, the results for the pre-GFC period are consistent and show that non-GAAP earnings are strongly significant at high level of unconditional conservatism. Both DIFF1 and DIFF2 are statistically significant at high level of unconditional conservatism in relation all non-GAAP earnings except IBES. DIFF1 and DIFF2 are also generally moderately to strongly significant at low levels of unconditional conservatism in relation to CORE. The results show that GAAP earnings are incrementally value relevant when unconditional conservatism is comparatively high.

In the GFC period, I find results that are generally consistent at the high level of unconditional conservatism with the pre-GFC period. Panels C and D show all non-GAAP earnings are generally statistically significant at the high level of unconditional conservatism except in CF Model 2.

Table 7.6: Ohlson Model: Financial Sector Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low Market-to-Book Ratio Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.529***	2.345	1.347	15.018***	850	0.5883
	High	1.767***	19.267***	8.435	18.141***	850	0.9477
CORE	Low	0.523***	1.433	5.253**	15.276***	850	0.5851
	High	1.872***	17.947***	17.184***	17.932***	850	0.9468
CE	Low	0.537***	2.008	1.049	14.889***	850	0.5823
	High	1.912***	17.796***	21.288***	17.975***	850	0.9469
CF	Low	0.529***	2.017	2.115	15.107***	850	0.5822
	High	1.898***	17.562***	17.353***	17.913***	850	0.9477

Panel B: Pre-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.528***	3.060	2.152	14.709***	850	0.5918
	High	1.728***	19.637***	2.626	18.222***	850	0.9471
CORE	Low	0.539***	1.435	7.366***	14.883***	850	0.5962
	High	1.880***	17.401***	15.150***	17.958***	850	0.9443
CE	Low	0.530***	2.648	3.656	14.965***	850	0.5867
	High	1.913***	15.715***	12.168***	17.914***	850	0.9441
CF	Low	0.532***	2.657	2.730	14.786***	850	0.5865
	High	1.935***	16.187***	15.919***	17.965***	850	0.9455

Panel C: GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.601***	-0.640	-1.459*	4.225	247	0.8780
	High	2.076***	13.532*	6.982*	12.518***	247	0.6387
CORE	Low	0.566***	-0.752	-2.568**	5.289	247	0.8865
	High	2.161***	10.218*	9.117	13.499***	247	0.6305
CE	Low	0.600***	-1.235*	-3.966*	4.552	247	0.8832
	High	2.168***	10.068*	10.500**	13.508***	247	0.6305
CF	Low	0.574***	-0.638	-1.145*	4.712	247	0.8842
	High	2.175***	9.397*	9.981*	13.541***	247	0.6324

Panel D: GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.603***	-0.270	-1.290*	4.053	247	0.8744
	High	2.088***	12.241*	4.153*	12.750***	247	0.6346
CORE	Low	0.570***	-0.471	-2.320*	4.916	247	0.8807
	High	2.173***	9.493*	0.475	13.826***	247	0.6265
CE	Low	0.578***	-0.621*	-11.357*	4.448	247	0.8854
	High	2.218***	6.628*	6.133	14.164***	247	0.6204
CF	Low	0.579***	-0.369	-0.892	4.557	247	0.8804
	High	2.230***	5.907	6.523	14.280***	247	0.6225

Panel E: Post-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.423^{***}	4.541^{***}	2.620^{***}	7.110^{*}	579	0.6899
	High	2.623^{***}	6.280	-3.317	10.250^{***}	579	0.7877
CORE	Low	0.424^{***}	4.148^{***}	2.583^{**}	7.226^{*}	579	0.6846
	High	2.696^{***}	5.150	0.170	10.169^{***}	579	0.7865
CE	Low	0.424^{***}	3.902^{***}	2.099^{*}	7.023^{*}	579	0.6905
	High	2.743^{***}	4.161	11.168	10.626^{***}	579	0.7854
CF	Low	0.423^{***}	3.511^{***}	3.488^{***}	7.434^{*}	579	0.6786
	High	2.691^{***}	4.350	5.646	9.977^{***}	579	0.7903

Panel F: Post-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.427^{***}	3.727^{***}	3.116^{***}	7.101^{*}	579	0.6789
	High	2.610^{***}	8.025	6.246	9.933^{***}	579	0.7892
CORE	Low	0.427^{***}	3.795^{***}	2.911^{***}	7.096^{*}	579	0.6796
	High	2.623^{***}	7.948	6.039	9.902^{***}	579	0.7895
CE	Low	0.427^{***}	3.516^{***}	2.600	7.053^{*}	579	0.6789
	High	2.660^{***}	8.818^{*}	21.616^{**}	10.435^{***}	579	0.8007
CF	Low	0.427^{***}	3.407^{***}	3.492^{***}	7.170^{*}	579	0.6788
	High	2.618^{***}	7.472	8.703^{*}	9.680^{***}	579	0.7962

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON quintile is Low if market-to-book (MTB) ratio quintile is 1 and High if MTB ratio quintile is 5. Low and High indicate low unconditional conservatism and high unconditional conservatism, respectively.

DIFF1 is marginally to moderately significant in relation to CORE, CE and CF at the high level of unconditional conservatism. DIFF2 is only marginally significant and positive in relation to IBES at the high level of unconditional conservatism. In contrast, DIFF1 and DIFF2 are statistically significant and negative when unconditional conservatism is low in relation to all non-GAAP earnings except in relation to CF Model 2.

In the post-GFC period, all non-GAAP earnings are not significant when unconditional conservatism is high in all models. In contrast, all non-GAAP earnings are strongly significant when unconditional conservatism is low in all models. DIFF1 and DIFF2 are generally statistically significant and positive in relation to all non-GAAP earnings, except CE Model 2, when unconditional conservatism is low. DIFF1 is not statistically significant when unconditional conservatism is high. However, DIFF2 is marginally to moderately significant and positive in relation to CE and CF when unconditional conservatism is high. Notably, in the post-GFC period, the sign of statistically significant DIFF1 and DIFF2 are positive when unconditional conservatism is low. This contrasts with the results during the GFC. Consistent with my results using main effects and interaction terms in the models, I find a change in investors' focus during and after the GFC. The results for the post-GFC period is consistent with the expectation that investors find GAAP earnings incrementally value relevant because GAAP earnings are more credible and reliable. Furthermore, it is notable that the magnitude of the coefficients of BV, NonGAAPE, DIFF1 and DIFF2 are consistently larger when unconditional conservatism is high.

7.2.1.2 Non-Financial Sector Sample

7.2.1.2.1 Model Estimation with Main Effects and Interaction Terms

Table 7.7 shows the estimation results of the unconditional conservatism models with main effects and interaction variables for firms not in the financial sector. All models are statistically significant across all period windows.

In the pre-GFC period, BV is strongly significant but NonGAAPE is not statistically significant in all models. DIFF is only marginally significant and negative in relation to CE Model 2. CON, however, is marginally significant and negative in all models, indicating that a low level of conservatism is negatively associated with share price. It appears that investors generally focus on the book value of equity when unconditional conservatism is low. Interestingly, when unconditional conservatism is high, investors place increased emphasis on the book value of equity, as indicated by the strongly significant and positive CON*BV. Non-GAAP earnings do not appear to be value relevant when unconditional conservatism is high. GAAP earnings are incrementally value relevant and negatively associated with share price when unconditional conservatism is high in relation to IBES.

However, CON*DIFF is strongly significant and positive in relation to CORE Model 2. The results show that investors focus predominantly on the book value of equity, but there is also some evidence that GAAP earnings are incrementally value relevant when unconditional conservatism is high. Using BIC to evaluate model performance, IBES models perform best of all the models tested.

Table 7.7: Ohlson Model: Non-Financial Sector Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with Market-to-Book Ratio Dummy and Interaction Terms as Controls

$$\text{Model 1: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 Con_{it} + \beta_5 Con * BV_{it} + \beta_6 Con * NonGAAPE_{it} + \beta_7 Con * DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 Con_{it} + \beta_5 Con * BV_{it} + \beta_6 Con * NonGAAPE_{it} + \beta_7 Con * DIFF2_{it} + \varepsilon_{it}$$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.610^{***}	0.610^{***}	0.602^{***}	0.613^{***}	0.603^{***}	0.583^{***}	0.606^{***}	0.607^{***}
	(4.47)	(4.45)	(4.31)	(4.21)	(4.31)	(4.08)	(4.37)	(4.03)
NonGAAPE	-0.542	-0.540	-0.364	-0.857	-0.212	-0.261	-0.095	-0.206
	(-0.26)	(-0.27)	(-0.20)	(-0.76)	(-0.12)	(-0.40)	(-0.05)	(-0.23)
DIFF	0.252	-0.558	1.241	0.071	-1.138	-4.498^{*}	-0.457	-0.556
	(0.28)	(-1.68)	(0.69)	(0.10)	(-0.56)	(-2.51)	(-0.25)	(-0.70)
CON	-5.144^{*}	-5.560^{*}	-6.190^{*}	-6.042^{*}	-6.286^{*}	-5.273^{*}	-6.214^{*}	-6.283^{*}
	(-2.07)	(-2.30)	(-2.18)	(-2.20)	(-2.22)	(-2.07)	(-2.18)	(-2.23)
CON*BV	5.430^{***}	5.489^{***}	5.676^{***}	5.538^{***}	5.744^{***}	5.793^{***}	5.745^{***}	5.756^{***}
	(15.58)	(16.15)	(10.96)	(11.37)	(11.22)	(11.22)	(11.40)	(11.47)
CON*NonGAAPE	0.821	1.032	-0.767	0.244	-1.168	-0.881	-1.565	-1.244
	(0.26)	(0.35)	(-0.26)	(0.10)	(-0.39)	(-0.38)	(-0.51)	(-0.51)
CON*DIFF	-9.956^{***}	-7.670^{***}	3.832	16.131^{***}	-2.803	3.255	-0.783	-0.423
	(-4.18)	(-3.37)	(0.97)	(3.85)	(-0.76)	(1.04)	(-0.26)	(-0.19)
Intercept	8.785^{***}	8.723^{***}	8.677^{***}	8.659^{***}	8.644^{***}	7.685^{***}	8.796^{***}	8.738^{***}
	(4.92)	(4.91)	(4.97)	(4.98)	(4.95)	(5.30)	(4.91)	(4.81)
N	14022	14022	14022	14022	14022	14022	14022	14022
Adj R^2	0.8738	0.8714	0.8655	0.8689	0.8648	0.8664	0.8646	0.8644
BIC	117875	118146	118772	118412	118844	118678	118871	118887
BIC Rank	1	2	5	3	6	4	7	8

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.526^{***}	0.529^{***}	0.525^{***}	0.529^{***}	0.513^{***}	0.479^{***}	0.529^{***}	0.533^{***}
	(8.19)	(8.41)	(8.14)	(8.40)	(8.62)	(8.81)	(8.25)	(8.69)
NonGAAPE	1.750^{***}	1.668^{***}	1.420^{**}	1.151^{*}	1.389^{**}	1.044^{***}	1.136^{*}	0.678
	(3.63)	(3.65)	(2.68)	(2.51)	(2.81)	(4.22)	(2.03)	(1.72)
DIFF	0.509	0.505^{***}	1.095	0.659^{**}	0.404	-1.660	1.387^{**}	0.924^{***}
	(1.15)	(3.55)	(1.42)	(3.25)	(0.77)	(-1.83)	(2.99)	(4.38)
CON	2.243	2.064	2.150	1.878	2.175	2.340	2.274	2.193
	(1.49)	(1.36)	(1.32)	(1.14)	(1.36)	(1.44)	(1.43)	(1.33)
CON*BV	4.357^{***}	4.353^{***}	4.362^{***}	4.367^{***}	4.397^{***}	4.414^{***}	4.336^{***}	4.349^{***}
	(9.72)	(9.76)	(9.96)	(10.54)	(10.19)	(10.92)	(9.99)	(11.12)
CON*NonGAAPE	-1.823	-1.802	-1.367	-0.863	-1.350	-1.539	-1.676	-1.814
	(-0.43)	(-0.43)	(-0.36)	(-0.22)	(-0.35)	(-0.64)	(-0.46)	(-0.76)
CON*DIFF	-0.082	-1.608	-2.285	-4.368	1.342	1.166	-0.884	-1.097
	(-0.05)	(-1.23)	(-0.58)	(-1.02)	(0.22)	(0.31)	(-0.24)	(-0.48)
Intercept	5.267^{***}	5.373^{***}	5.326^{***}	5.469^{***}	5.398^{***}	5.216^{***}	5.301^{***}	5.488^{***}
	(4.81)	(4.85)	(4.72)	(4.88)	(5.03)	(4.92)	(4.86)	(4.91)
N	3636	3636	3636	3636	3636	3636	3636	3636
Adj R^2	0.6885	0.6891	0.6881	0.6897	0.6897	0.6897	0.6903	0.6903
BIC	30493	30479	30490	30479	30479	30479	30463	30464
BIC Rank	8	3	7	3	3	3	1	2

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.351	0.337	0.522^{**}	0.548^{**}	0.485^{*}	0.283	0.503^{**}	0.532^{**}
	(1.65)	(1.59)	(2.60)	(2.89)	(2.41)	(1.26)	(2.58)	(3.07)
NonGAAPE	15.182	15.724	3.214	1.855	2.957	1.804	4.683	3.200
	(1.87)	(1.93)	(0.62)	(0.53)	(0.59)	(0.72)	(0.94)	(1.19)
DIFF	-3.292^{***}	-2.488^{*}	5.292	1.123	0.287	-13.658^{**}	3.449	1.982
	(-4.03)	(-2.07)	(0.93)	(0.89)	(0.06)	(-3.07)	(0.71)	(0.81)
CON	-5.011	-4.944	-5.069	-5.196	-4.913	-3.452	-5.387	-5.537
	(-1.49)	(-1.49)	(-1.33)	(-1.35)	(-1.34)	(-1.24)	(-1.42)	(-1.45)
CON*BV	4.371^{***}	4.400^{***}	4.413^{***}	4.614^{***}	4.472^{***}	4.881^{***}	4.431^{***}	4.654^{***}
	(9.07)	(9.18)	(8.72)	(9.18)	(8.29)	(9.61)	(8.63)	(9.73)
CON*NonGAAPE	-4.623	-5.356	4.854	3.351	4.797	2.923	2.745	1.162
	(-0.53)	(-0.60)	(1.03)	(0.95)	(1.06)	(0.98)	(0.55)	(0.33)
CON*DIFF	4.454	2.932	7.188	0.119	7.065	14.719^{*}	4.884	3.149
	(0.79)	(0.95)	(1.02)	(0.04)	(1.39)	(2.31)	(1.02)	(0.98)
Intercept	9.133^{***}	9.044^{***}	9.033^{**}	9.073^{**}	8.887^{**}	6.690^{***}	9.329^{**}	9.277^{**}
	(3.82)	(3.86)	(3.04)	(2.98)	(3.10)	(3.80)	(3.15)	(3.12)
N	8188	8188	8188	8188	8188	8188	8188	8188
Adj R^2	0.7442	0.7446	0.7106	0.7048	0.7118	0.7189	0.7137	0.7079
BIC	73601	73599	74620	74785	74589	74384	74525	74688
BIC Rank	2	1	6	8	5	3	4	7

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON = 1 if market-to-book (MTB) ratio quintile is 5 and 0 if MTB ratio quintile is 1. CON*BV = Interaction term of MTB ratio with book value of common equity per share. CON*NonGAAPE = Interaction term of MTB ratio with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. CON*DIFF = Interaction term of MTB ratio with the corresponding DIFF measure of DIFF1 and DIFF2.

During the GFC, there is an observable shift in investors' focus to earnings, particularly non-GAAP earnings. While BV remains strongly significant and positive in all models, Non-GAAP earnings are also generally statistically significant and positive in all models. Additionally, DIFF is statistically significant and positive in relation to IBES Model 2, CORE Model 2 and CF Models 1 and 2. CON is not statistically significant. Overall, these results show investors place greater emphasis on earnings during the GFC in comparison to the pre-GFC period. High unconditional conservatism does not appear to impact on investors' focus on GAAP and non-GAAP earnings, however, investors appear to place stronger emphasis on the book value of equity when unconditional conservatism is high. Based on BIC, CF models outperform the other models tested.

In the post-GFC period, the results indicate another shift in investors' emphasis. BV is marginally to moderately significant in relation to CORE (Models 1 and 2), CE (Model

1) and CF (Models 1 and 2) but not in other models. However, CON*BV is strongly significant in all models. In contrast to the GFC period, NonGAAPE is not statistically significant in all models. DIFF is statistically significant and negative only in relation to IBES Models 1 and 2 and CE Model 2. The results of the main effects of GAAP and non-GAAP earnings in the post-GFC period are similar to the pre-GFC period. The results of the interaction terms, CON*DIFF and CON*NonGAAPE, are generally not significant. Overall, the results are mixed. It appears investors remain focused on the book value of equity in relation to CORE, CE and CF. However, in relation to IBES, investors are focused on the book value of equity primarily when unconditional conservatism is high. When unconditional conservatism is low, investors appear to find GAAP earnings incrementally value relevant. Furthermore, when unconditional conservatism is low, investors appear to focus on GAAP earnings, which are generally closer to, or lower than, non-GAAP earnings. Based on BIC, IBES models perform best of all models tested.

7.2.1.2.2 Model Estimation by Low and High Unconditional Conservatism

The estimation results by low and high unconditional conservatism for the non-financial sector sample is shown in Table 7.8. The results for the pre-GFC period show non-GAAP earnings are not statistically significant at both low and high levels of unconditional conservatism. The results for DIFF1 and DIFF2 are mixed. DIFF1 and DIFF2 are strongly significant and negative at the high level of unconditional conservatism in relation to IBES. However, DIFF2 is statistically significant and positive at the high level of unconditional conservatism in relation to CORE but it is marginally significant and negative at the low level of unconditional conservatism in relation to CE.

These results show that in the pre-GFC period, investors focus predominantly on book value of equity. Nevertheless, GAAP earnings have incremental value relevance in relation to non-GAAP earnings, in relation to IBES, CORE and CE, at the high level of unconditional conservatism. Interestingly, in relation to IBES, investors appear to place greater emphasis on GAAP earnings, which are generally closer to, or lower than, non-GAAP earnings when unconditional conservatism is high.

Table 7.8: Ohlson Model: Non-Financial Sector Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low Market-to-Book Ratio Quintiles

Model 1: $P_{it} = \alpha_{0} + \beta_{1}BV_{it} + \beta_{2}NonGAAPE_{it} + \beta_{3}DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_{0} + \beta_{1}BV_{it} + \beta_{2}NonGAAPE_{it} + \beta_{3}DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.610^{***}	-0.542	0.252	8.785^{***}	7011	0.3872
	High	6.040^{***}	0.279	-9.705^{***}	3.641^{*}	7011	0.9016
CORE	Low	0.602^{***}	-0.364	1.241	8.677^{***}	7011	0.3924
	High	6.278^{***}	-1.131	5.073	2.487	7011	0.8921
CE	Low	0.603^{***}	-0.212	-1.138	8.644^{***}	7011	0.3927
	High	6.346^{***}	-1.380	-3.942	2.358	7011	0.8913
CF	Low	0.606^{***}	-0.095	-0.457	8.796^{***}	7011	0.3893
	High	6.351^{***}	-1.661	-1.239	2.582	7011	0.8912

Panel B: Pre-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.610^{***}	-0.540	-0.558	8.723^{***}	7011	0.3887
	High	6.098^{***}	0.492	-8.228^{***}	3.163	7011	0.8989
CORE	Low	0.613^{***}	-0.857	0.071	8.659^{***}	7011	0.3904
	High	6.151^{***}	-0.613	16.202^{***}	2.617	7011	0.8960
CE	Low	0.583^{***}	-0.261	-4.498^{*}	7.685^{***}	7011	0.4288
	High	6.376^{***}	-1.142	-1.243	2.412	7011	0.8906
CF	Low	0.607^{***}	-0.206	-0.556	8.738^{***}	7011	0.3910
	High	6.363^{***}	-1.449	-0.979	2.455	7011	0.8910

Panel C: GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.526^{***}	1.750^{***}	0.509	5.267^{***}	1818	0.4842
	High	4.884^{***}	-0.073	0.427	7.511^{***}	1818	0.6261
CORE	Low	0.525^{***}	1.420^{**}	1.095	5.326^{***}	1818	0.4796
	High	4.888^{***}	0.054	-1.189	7.477^{***}	1818	0.6262
CE	Low	0.513^{***}	1.389^{**}	0.404	5.398^{***}	1818	0.4900
	High	4.910^{***}	0.039	1.747	7.573^{***}	1818	0.6269
CF	Low	0.529^{***}	1.136^{*}	1.387^{**}	5.301^{***}	1818	0.4813
	High	4.866^{***}	-0.541	0.503	7.575^{***}	1818	0.6292

Panel D: GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.529^{***}	1.668^{***}	0.505^{***}	5.373^{***}	1818	0.4864
	High	4.883^{***}	-0.134	-1.103	7.436^{***}	1818	0.6266
CORE	Low	0.529^{***}	1.151^{*}	0.659^{**}	5.469^{***}	1818	0.4807
	High	4.896^{***}	0.288	-3.709	7.347^{***}	1818	0.6284
CE	Low	0.479^{***}	1.044^{***}	-1.660	5.216^{***}	1818	0.4946
	High	4.893^{***}	-0.494	-0.494	7.556^{***}	1818	0.6263
CF	Low	0.533^{***}	0.678	0.924^{***}	5.488^{***}	1818	0.4817
	High	4.882^{***}	-1.136	-0.173	7.681^{***}	1818	0.6290

Panel E: Post-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.351	15.182	-3.292^{***}	9.133^{***}	4094	0.4141
	High	4.722^{***}	10.560^{**}	1.162	4.122	4094	0.7737
CORE	Low	0.522^{**}	3.214	5.292	9.033^{**}	4094	0.2253
	High	4.935^{***}	8.068	12.481^{**}	3.965	4094	0.7662
CE	Low	0.485^{*}	2.957	0.287	8.887^{**}	4094	0.2372
	High	4.957^{***}	7.753	7.352	3.974	4094	0.7653
CF	Low	0.503^{**}	4.683	3.449	9.329^{**}	4094	0.2420
	High	4.935^{***}	7.428	8.333	3.943	4094	0.7669

Panel F: Post-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.337	15.724	-2.488^{*}	9.044^{***}	4094	0.4169
	High	4.737^{***}	10.368^{*}	0.444	4.100	4094	0.7736
CORE	Low	0.548^{**}	1.855	1.123	9.073^{**}	4094	0.2114
	High	5.162^{***}	5.205	1.242	3.877	4094	0.7611
CE	Low	0.283	1.804	-13.658^{**}	6.690^{***}	4094	0.3066
	High	5.164^{***}	4.727	1.060	3.237	4094	0.7610
CF	Low	0.532^{**}	3.200	1.982	9.277^{**}	4094	0.2303
	High	5.187^{***}	4.362	5.130	3.739	4094	0.7615

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON quintile is Low if market-to-book (MTB) ratio quintile is 1 and High if MTB ratio quintile is 5. Low and High indicate low unconditional conservatism and high unconditional conservatism, respectively.

During the GFC, IBES, CORE, CE and CF are statistically significant and positive when unconditional conservatism is low in Model 1. In Model 2, IBES, CORE and CE are statistically significant and positive when unconditional conservatism is low. DIFF1 is only moderately significant and positive at the low level of unconditional conservatism in relation to CF but DIFF2 is moderately to strongly significant and positive in relation to IBES, CORE and CF at the low level of unconditional conservatism. While the results for the GFC period show some evidence of a shift in investors' emphasis, it appears that investors remain focused predominantly on the book value of equity.

The results for the post-GFC period show another shift in investor's emphasis on GAAP and non-GAAP earnings. Interestingly, both BV and IBES are not significant when unconditional conservatism is low for both Model 1 and Model 2. However, DIFF1 is strongly significant and negative and DIFF2 is marginally significant and negative in these instances. Similarly in Model 2, BV and CE are not significant when unconditional conservatism is low, however, DIFF2 is moderately significant and negative. It appears that investors are focused on GAAP earnings, which are generally closer to, or lower than, non-GAAP earnings after the GFC in relation to IBES and CE. Investors may believe the net assets are overvalued and find comparatively lower GAAP earnings more value relevant.

7.2.1.3 S&P 500 Sample

7.2.1.3.1 Model Estimation with Main Effects and Interaction Terms

The estimation results of the unconditional conservatism models with main effects and interaction variables for firms in the S&P 500 index are shown in Table 7.9. All models are statistically significant across all period windows.

In the pre-GFC period, BV and CON are strongly significant and positive in all models. NonGAAPE is generally statistically significant and positive. The results for DIFF, however, are mixed. It is marginally significant and negative in relation to IBES Model 2, but marginally significant and positive in relation to Model 1 of CORE, CE and CF. These results indicate that investors focus predominantly on the book value of equity but also find non-GAAP earnings generally value relevant. Furthermore, investors also find GAAP earnings incrementally value relevant. The results also show that unconditional conservatism is positively associated with share price. In addition, when unconditional conservatism is high, investors place increased emphasis on the book value of equity. There is weak evidence that investors place increased emphasis on GAAP and non-GAAP earnings when unconditional conservatism is high but only in relation to CORE, CE and CF. In terms of model performance, IBES models outperform other models tested based on BIC.

During the GFC, investors remain strongly focused on the book value of equity. CON is marginally to moderately significant and positive only in relation to Model 2 of CORE, CE and CF. When unconditional conservatism is low, investors do not appear to find GAAP and non-GAAP earnings value relevant – NonGAAPE and DIFF are not statistically significant.

Table 7.9: Ohlson Model: S&P 500 Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with Market-to-Book Ratio Dummy and Interaction Terms as Controls

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 Con_{it} + \beta_5 Con*BV_{it} + \beta_6 Con*NonGAAPE_{it} + \beta_7 Con*DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 Con_{it} + \beta_5 Con*BV_{it} + \beta_6 Con*NonGAAPE_{it} + \beta_7 Con*DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.037***	1.030***	1.208***	1.331***	1.219***	1.374***	1.208***	1.348***
	(8.03)	(7.93)	(12.49)	(13.23)	(12.88)	(16.00)	(12.54)	(14.49)
NonGAAPE	9.055**	9.262***	4.483*	1.394	4.343*	0.839	4.467*	0.995
	(3.28)	(3.40)	(2.49)	(0.85)	(2.37)	(0.72)	(2.48)	(0.79)
DIFF	-0.289	-0.884*	4.621*	-1.208	5.162*	3.935	4.481*	1.016
	(-0.26)	(-2.26)	(2.23)	(-0.87)	(2.33)	(1.55)	(2.50)	(0.81)
CON	14.811***	14.961***	16.481***	18.181***	16.325***	17.779***	16.304***	18.444***
	(3.60)	(3.62)	(4.24)	(5.32)	(4.28)	(5.10)	(4.23)	(5.35)
CON*BV	1.711***	1.753***	1.618***	1.880***	1.584**	1.900***	1.565**	1.867***
	(3.40)	(3.54)	(3.30)	(3.29)	(3.17)	(3.78)	(3.13)	(3.36)
CON*NonGAAPE	9.813	9.259	13.211	10.680	13.905	11.420*	13.293	10.539*
	(1.12)	(1.04)	(1.70)	(1.88)	(1.89)	(2.28)	(1.75)	(1.99)
CON*DIFF	7.805	4.585	11.307	9.165*	14.367*	12.368	13.854	10.772*
	(1.22)	(1.60)	(1.11)	(2.05)	(2.00)	(1.78)	(1.78)	(2.01)
Intercept	2.519	2.416	1.142	0.316	1.201	0.725	1.178	0.000
	(1.61)	(1.53)	(0.72)	(0.19)	(0.73)	(0.41)	(0.73)	(0.00)
N	3163	3163	3163	3163	3163	3163	3163	3163
Adj R^2	0.8944	0.8951	0.8881	0.8826	0.8886	0.8834	0.8883	0.8816
BIC	25548	25528	25733	25884	25718	25862	25719	25902
BIC Rank	2	1	5	7	3	6	4	8

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.964***	0.979***	0.971***	0.984***	0.960***	0.953***	0.993***	0.995***
	(11.24)	(14.82)	(10.96)	(15.75)	(10.16)	(15.96)	(13.92)	(18.12)
NonGAAPE	-0.076	-0.076	-0.274	-0.300	-0.246	-0.068	-0.060	-0.022
	(-0.05)	(-0.06)	(-0.24)	(-0.28)	(-0.23)	(-0.10)	(-0.07)	(-0.04)
DIFF	-0.441	-0.030	-0.114	0.304	-0.995	-2.367	0.225	0.266
	(-0.68)	(-0.08)	(-0.10)	(0.77)	(-0.71)	(-1.16)	(0.23)	(0.47)
CON	5.710	6.237	7.971	10.225*	7.559	11.645**	7.835	11.089*
	(1.17)	(1.36)	(1.77)	(2.14)	(1.64)	(2.74)	(1.80)	(2.47)
CON*BV	2.554***	2.525***	2.615***	3.145***	2.627***	3.337***	2.566***	3.302***
	(3.76)	(3.75)	(3.76)	(5.01)	(3.67)	(4.54)	(3.67)	(5.03)
CON*NonGAAPE	23.696***	23.740***	21.517***	13.898*	22.040***	9.486*	20.950***	8.814*
	(3.69)	(3.73)	(3.40)	(2.41)	(3.46)	(2.20)	(3.64)	(2.00)
CON*DIFF	-3.388	-0.241	18.980**	-5.756	26.353***	12.239*	22.053***	9.459
	(-0.52)	(-0.13)	(2.74)	(-1.55)	(3.89)	(2.13)	(3.59)	(1.96)
Intercept	3.229	2.868	3.091	2.836	3.387	2.450	2.802	2.853
	(1.20)	(1.32)	(1.11)	(1.43)	(1.21)	(1.13)	(1.18)	(1.43)
N	877	877	877	877	877	877	877	877
Adj R^2	0.8283	0.8280	0.8245	0.8172	0.8257	0.8116	0.8313	0.8167
BIC	7594	7595	7612	7648	7607	7668	7571	7644
BIC Rank	2	3	5	7	4	8	1	6

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.573*	0.567*	0.624**	0.617**	0.521*	0.394	0.661**	0.660**
	(2.42)	(2.51)	(2.82)	(2.90)	(2.07)	(1.54)	(3.21)	(2.86)
NonGAAPE	17.769*	18.541*	15.064*	15.436*	13.025*	10.236*	12.046*	10.838*
	(2.04)	(2.22)	(2.03)	(2.20)	(2.13)	(2.14)	(2.04)	(2.05)
DIFF	2.530	3.274	3.259	0.227	5.684	-5.316	12.093*	10.708*
	(0.64)	(1.89)	(0.76)	(0.22)	(1.82)	(-1.59)	(1.98)	(2.02)
CON	-6.348	-5.542	-4.690	-5.191	-6.481	-6.932	-7.749	-8.025
	(-0.86)	(-0.74)	(-0.59)	(-0.65)	(-0.85)	(-0.92)	(-0.92)	(-0.89)
CON*BV	3.995***	3.817***	4.046***	3.974***	4.191***	4.381***	3.960***	4.108***
	(4.86)	(4.72)	(5.37)	(5.32)	(5.61)	(6.12)	(5.70)	(6.16)
CON*NonGAAPE	2.912	4.349	4.581	5.048	5.721	8.168	7.341	7.067
	(0.28)	(0.41)	(0.50)	(0.56)	(0.72)	(1.13)	(0.93)	(0.94)
CON*DIFF	-50.800*	-15.052	-14.836	-11.055	11.047	23.908	10.099	9.701
	(-1.98)	(-1.33)	(-1.27)	(-1.36)	(1.02)	(1.85)	(1.15)	(1.18)
Intercept	8.508*	8.343	10.328	10.433	10.793*	12.244*	10.703	11.902
	(2.00)	(1.92)	(1.89)	(1.92)	(2.07)	(2.37)	(1.82)	(1.77)
N	2212	2212	2212	2212	2212	2212	2212	2212
Adj R^2	0.7777	0.7721	0.7580	0.7573	0.7563	0.7546	0.7554	0.7445
BIC	21656	21711	21836	21851	21859	21875	21859	21956
BIC Rank	1	2	3	4	5	7	5	8

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON = 1 if market-to-book (MTB) ratio quintile is 5 and 0 if MTB ratio quintile is 1. CON*BV = Interaction term of MTB ratio with book value of common equity per share. CON*NonGAAPE = Interaction term of MTB ratio with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. CON*DIFF = Interaction term of MTB ratio with the corresponding DIFF measure of DIFF1 and DIFF2.

In contrast, when unconditional conservatism is high, investors place increased emphasis on the book value of equity and non-GAAP earnings. CON*BV is strongly significant and positive in all models and CON*NonGAAPE is also statistically significant and positive in all models. There is some evidence that investors find GAAP earnings incrementally value relevant when unconditional conservatism is high, but only in relation to CORE, CE and CF. It appears that during the GFC, investors are focused on the book value of equity in valuing firms. Investors generally find earnings more value relevant only when unconditional conservatism is high. Based on BIC, the best performing models are CF Model 1 and IBES Model 1.

There is evidence of a shift in investors' focus on the book value of equity and earnings in the post-GFC period. In the post-GFC period, the level of statistical significance of BV is lower in comparison to the pre-GFC and GFC periods. Also, NonGAAPE is marginally significant and positive in all models. DIFF, however, is only marginally significant and positive in relation to CF. CON is not statistically significant. These results indicate that investors focus on both the book value of equity and non-GAAP earnings when unconditional conservatism is low in the post-GFC period, which is in contrast to the GFC period where investors focus only on the book value of equity. Furthermore, when unconditional conservatism is high, investors place increased emphasis on the book value of equity but not on non-GAAP earnings. Investors do not appear to find GAAP earnings generally incrementally value relevant when unconditional conservatism is high. CON*DIFF is only marginally significant and negative in relation to IBES and is not statistically significant in all other models. Using BIC to evaluate model performance, IBES models perform best among the models tested.

7.2.1.3.2 Model Estimation by Low and High Unconditional Conservatism

Table 7.10 shows the estimation results by low and high unconditional conservatism for the S&P 500 sample. In Panel A, all non-GAAP earnings are statistically significant at low and high levels of unconditional conservatism. In Panel B, IBES is statistically significant at both low and high levels of unconditional conservatism, however, CORE, CE and CF are statistically significant only at the high level of unconditional conservatism. The results for DIFF1 and DIFF2 are mixed. DIFF1 is statistically significant at both levels of unconditional conservatism in relation to CE and CF but is statistically significant only at the low level of unconditional conservatism in relation to CORE. DIFF1 is not significant in relation to IBES. The sign of all statistically significant DIFF1 is positive. The results for DIFF2 are weaker. DIFF2 is statistically significant in relation to CE and CF only at the high level of unconditional conservatism.

Furthermore, DIFF2 is marginally significant and negative in relation to IBES at the low level of unconditional conservatism. Similar to the financial sector and non-financial sector sample, the results show investors focus predominantly on the book value of equity. Nevertheless, there is some evidence that GAAP earnings are incrementally value relevant, particularly at the high level of unconditional conservatism.

Table 7.10: Ohlson Model: S&P 500 Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low Market-to-Book Ratio Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.037***	9.055**	-0.289	2.519	1581	0.9359
	High	2.748***	18.868*	7.516	17.330***	1582	0.5338
CORE	Low	1.208***	4.483*	4.621*	1.142	1581	0.9290
	High	2.826***	17.694*	15.928	17.623***	1582	0.5311
CE	Low	1.219***	4.343*	5.162*	1.201	1581	0.9296
	High	2.803***	18.248*	19.530**	17.527***	1582	0.5311
CF	Low	1.208***	4.467*	4.481*	1.178	1581	0.9290
	High	2.773***	17.760*	18.335*	17.482***	1582	0.5330

Panel B: Pre-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.030***	9.262***	-0.884*	2.416	1581	0.9365
	High	2.784***	18.521*	3.702	17.377***	1582	0.5350
CORE	Low	1.331***	1.394	-1.208	0.316	1581	0.9248
	High	3.211***	12.073*	7.957	18.497***	1582	0.5143
CE	Low	1.374***	0.839	3.935	0.725	1581	0.9256
	High	3.275***	12.258*	16.303**	18.504***	1582	0.5154
CF	Low	1.348***	0.995	1.016	0.000	1581	0.9238
	High	3.214***	11.534*	11.788*	18.444***	1582	0.5138

Panel C: GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.964***	-0.076	-0.441	3.229	438	0.8816
	High	3.518***	23.619***	-3.829	8.939*	439	0.6652
CORE	Low	0.971***	-0.274	-0.114	3.091	438	0.8815
	High	3.586***	21.242***	18.866**	11.061**	439	0.6516
CE	Low	0.960***	-0.246	-0.995	3.387	438	0.8823
	High	3.586***	21.794***	25.358***	10.945**	439	0.6538
CF	Low	0.993***	-0.060	0.225	2.802	438	0.8881
	High	3.559***	20.890***	22.278***	10.637**	439	0.6598

Panel D: GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.979***	-0.076	-0.030	2.868	438	0.8814
	High	3.504***	23.664***	-0.271	9.105*	439	0.6649
CORE	Low	0.984***	-0.300	0.304	2.836	438	0.8817
	High	4.129***	13.598*	-5.453	13.061***	439	0.6241
CE	Low	0.953***	-0.068	-2.367	2.450	438	0.8826
	High	4.290***	9.417*	9.872	14.095***	439	0.6011
CF	Low	0.995***	-0.022	0.266	2.853	438	0.8883
	High	4.297***	8.792	9.725*	13.942***	439	0.6052

Panel E: Post-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.573*	17.769*	2.530	8.508*	1106	0.5684
	High	4.569***	20.680***	-48.269	2.160	1106	0.8311
CORE	Low	0.624**	15.064*	3.259	10.328	1106	0.5351
	High	4.670***	19.645**	-11.578	5.638	1106	0.8143
CE	Low	0.521*	13.025*	5.684	10.793*	1106	0.5503
	High	4.712***	18.746**	16.731	4.313	1106	0.8067
CF	Low	0.661**	12.046*	12.093*	10.703	1106	0.5143
	High	4.622***	19.387**	22.193**	2.954	1106	0.8178

Panel F: Post-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.567*	18.541*	3.274	8.343	1106	0.5740
	High	4.384***	22.889***	-11.778	2.801	1106	0.8211
CORE	Low	0.617**	15.436*	0.227	10.433	1106	0.5328
	High	4.591***	20.484***	-10.828	5.242	1106	0.8141
CE	Low	0.394	10.236*	-5.316	12.244*	1106	0.5394
	High	4.775***	18.404***	18.592	5.312	1106	0.8080
CF	Low	0.660**	10.838*	10.708*	11.902	1106	0.4705
	High	4.769***	17.905**	20.409**	3.877	1106	0.8172

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON quintile is Low if market-to-book (MTB) ratio quintile is 1 and High if MTB ratio quintile is 5. Low and High indicate low unconditional conservatism and high unconditional conservatism, respectively.

During the GFC, CORE, CE and CF are strongly significant in Model 1 (Panel C) when unconditional conservatism is high. In Panel B, I observe similar, but weaker, results for IBES, CORE and CE in Model 2, however, CF is not statistically significant. DIFF1 is statistically significant at the high level of unconditional conservatism in relation to CORE, CE and CF. DIFF2, however, is only marginally significant at the high level of unconditional conservatism in relation to CF.

These results clearly indicate that investors find non-GAAP earnings value relevant when unconditional conservatism is high but not when unconditional conservatism is low. Generally, GAAP earnings have incremental value relevance during the GFC at the high level of unconditional conservatism. While there is some evidence of a change in investors' focus during the GFC, the results indicate that investors remain focused primarily on the book value of equity. In the post-GFC period, however, the shift in investors' focus to non-GAAP earnings is more evident.

Panel E and Panel F show that non-GAAP earnings are statistically significant at both low and high levels of unconditional conservatism. DIFF1 and DIFF2, however, are notably significant only in relation to CF at both levels of unconditional conservatism. DIFF1 and DIFF2 are not statistically significant in relation to IBES, CORE and CE. There does not appear to be evidence of a shift to GAAP earnings.

Note that unconditional conservatism is measured using the MTB ratio. Given that investors are focused predominantly on the book value of equity, it appears that investors generally do not find GAAP earnings incrementally value relevant at given levels of unconditional conservatism. An explanation is that firms in the S&P 500 index are generally sound and viable firms, particularly as they remained sound and viable through the peak of the GFC. Additionally, the unconditional conservatism measure already captures some of the financial information in GAAP earnings through the book value of net assets.

7.2.1.4 Non-S&P 500 Sample

7.2.1.4.1 Model Estimation with Main Effects and Interaction Terms

Table 7.11 presents the estimation results of the unconditional conservatism models with main effects and interaction variables for firms not in the S&P 500 index. All models are statistically significant across all period windows.

In the pre-GFC period, BV is strongly significant in all models. NonGAAPE and CON are not significant in all models. DIFF is moderately significant and positive only in relation to CORE Model 1. It appears that investors are focused only on the book value of equity when unconditional conservatism is low. When unconditional conservatism is high, investors place increased emphasis on the book value of equity. However, it does not appear that the level of unconditional conservatism impacts on the emphasis investors generally place on both GAAP and non-GAAP earnings; CON*NonGAAPE is not statistically significant and CON*DIFF is also not statistically significant except in relation to CORE Model 2, where it is only marginally significant. Based on BIC, CF outperforms all other non-GAAP models.

Table 7.11: Ohlson Model: Non-S&P 500 Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with Market-to-Book Ratio Dummy and Interaction Terms as Controls

$$\text{Model 1: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 Con_{it} + \beta_5 Con*BV_{it} + \beta_6 Con*NonGAAPE_{it} + \beta_7 Con*DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 Con_{it} + \beta_5 Con*BV_{it} + \beta_6 Con*NonGAAPE_{it} + \beta_7 Con*DIFF2_{it} + \varepsilon_{it}$$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.679***	0.680***	0.662***	0.692***	0.687***	0.692***	0.683***	0.688***
	(5.53)	(5.50)	(5.50)	(5.64)	(5.68)	(5.66)	(5.52)	(5.51)
NonGAAPE	1.123	1.103	0.792	0.040	1.038	0.856	0.905	0.706
	(0.58)	(0.71)	(0.43)	(0.02)	(0.55)	(0.63)	(0.48)	(0.49)
DIFF	0.191	0.167	5.987**	1.881	-0.498	-2.230	0.838	0.627
	(0.10)	(0.12)	(2.58)	(0.98)	(-0.24)	(-0.90)	(0.43)	(0.43)
CON	-1.839	-2.100	-2.784	-2.727	-2.734	-2.438	-3.454	-3.485
	(-0.53)	(-0.65)	(-0.91)	(-0.94)	(-0.90)	(-0.83)	(-1.31)	(-1.38)
CON*BV	4.288***	4.303***	4.475***	4.329***	4.563***	4.559***	4.686***	4.681***
	(6.57)	(6.98)	(8.58)	(8.13)	(8.26)	(8.59)	(10.25)	(10.46)
CON*NonGAAPE	-1.593	-1.382	-2.364	-1.289	-3.055	-2.759	-4.493	-4.301
	(-0.31)	(-0.28)	(-0.46)	(-0.27)	(-0.59)	(-0.58)	(-0.81)	(-0.82)
CON*DIFF	-9.689	-9.400	2.823	16.186*	-4.207	-3.374	-1.842	-1.630
	(-1.51)	(-1.60)	(0.39)	(2.03)	(-0.63)	(-0.52)	(-0.41)	(-0.40)
Intercept	8.350***	8.357***	8.095***	8.277***	7.995***	7.482***	8.338***	8.349***
	(4.91)	(4.93)	(4.95)	(5.00)	(4.77)	(4.46)	(4.90)	(4.93)
N	12560	12560	12560	12560	12560	12560	12560	12560
Adj R^2	0.8318	0.8316	0.8282	0.8294	0.8258	0.8262	0.8331	0.8331
BIC	113525	113547	113783	113694	113948	113920	113403	113403
BIC Rank	3	4	6	5	8	7	1	1

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.587***	0.590***	0.589***	0.597***	0.604***	0.605***	0.619***	0.620***
	(9.06)	(8.75)	(9.55)	(9.24)	(8.41)	(7.79)	(9.37)	(9.27)
NonGAAPE	1.793***	1.971***	0.631	0.891*	0.313	0.531*	-0.495	-0.313
	(3.49)	(4.17)	(1.73)	(2.43)	(0.87)	(2.36)	(-0.92)	(-0.72)
DIFF	-0.520**	-0.087	-1.162*	-0.186	-0.585	-0.068	0.283	0.442
	(-2.72)	(-0.45)	(-2.41)	(-0.98)	(-1.32)	(-0.07)	(0.81)	(1.87)
CON	1.677	1.652	1.495	1.603	1.991	1.851	2.083	1.964
	(1.22)	(1.19)	(1.08)	(1.13)	(1.33)	(1.29)	(1.52)	(1.34)
CON*BV	4.010***	4.006***	4.007***	3.999***	4.015***	3.985***	3.952***	3.951***
	(10.70)	(10.66)	(10.72)	(10.99)	(10.92)	(10.54)	(10.67)	(11.15)
CON*NonGAAPE	-4.014	-4.232	-2.732	-2.895	-2.482	-2.705	-1.961	-2.272
	(-1.07)	(-1.19)	(-0.74)	(-0.80)	(-0.69)	(-1.06)	(-0.54)	(-0.90)
CON*DIFF	-0.632	-1.852	-1.475	-2.842	-0.245	-2.313	-2.136	-2.419
	(-0.28)	(-1.11)	(-0.42)	(-0.69)	(-0.04)	(-0.72)	(-0.55)	(-0.93)
Intercept	4.052**	4.033**	4.187***	4.016**	3.789**	3.790**	3.751**	3.861**
	(3.19)	(3.10)	(3.41)	(3.17)	(2.82)	(3.03)	(3.03)	(3.08)
N	3252	3252	3252	3252	3252	3252	3252	3252
Adj R^2	0.6913	0.6916	0.6892	0.6891	0.6882	0.6882	0.6901	0.6912
BIC	27146	27128	27161	27154	27180	27179	27160	27148
BIC Rank	2	1	6	4	8	7	5	3

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	0.715***	0.703***	0.720***	0.711***	0.720***	0.707***	0.724***	0.714***
	(6.55)	(6.39)	(6.85)	(7.12)	(6.70)	(6.43)	(6.78)	(6.75)
NonGAAPE	1.021	1.532	-0.917	-1.050	-0.928	-0.309	-0.369	0.193
	(0.68)	(1.06)	(-0.62)	(-0.91)	(-0.63)	(-0.25)	(-0.27)	(0.18)
DIFF	-1.899	-1.097	0.580	3.074	-1.986	-1.453	-0.738	-0.195
	(-1.49)	(-0.91)	(0.62)	(1.94)	(-1.30)	(-1.02)	(-0.52)	(-0.17)
CON	3.858*	3.749	3.680	3.452	3.824*	3.186	3.701	3.503
	(2.00)	(1.93)	(1.87)	(1.75)	(2.05)	(1.72)	(1.88)	(1.75)
CON*BV	2.916***	2.935***	3.041***	3.173***	3.061***	3.130***	3.032***	3.155***
	(10.96)	(11.04)	(10.49)	(11.32)	(9.32)	(11.22)	(9.97)	(11.72)
CON*NonGAAPE	5.067	4.424	4.989	2.929	4.666	2.054	3.772	1.231
	(1.43)	(1.22)	(1.60)	(1.08)	(1.38)	(0.85)	(1.01)	(0.44)
CON*DIFF	1.644	0.590	7.650*	-1.930	5.574*	-1.129	4.918	2.289
	(0.38)	(0.27)	(2.18)	(-0.89)	(2.34)	(-0.40)	(1.51)	(0.96)
Intercept	3.871*	3.964*	3.929*	4.104**	3.801*	3.844**	3.961*	4.066*
	(2.44)	(2.47)	(2.50)	(2.70)	(2.57)	(2.66)	(2.51)	(2.55)
N	7134	7134	7134	7134	7134	7134	7134	7134
Adj R^2	0.7505	0.7492	0.7436	0.7428	0.7433	0.7411	0.7433	0.7400
BIC	58731	58769	58916	58958	58944	58997	58926	59017
BIC Rank	1	2	3	6	5	7	4	8

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON = 1 if market-to-book (MTB) ratio quintile is 5 and 0 if MTB ratio quintile is 1. CON*BV = Interaction term of MTB ratio with book value of common equity per share. CON*NonGAAPE = Interaction term of MTB ratio with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. CON*DIFF = Interaction term of MTB ratio with the corresponding DIFF measure of DIFF1 and DIFF2.

During the GFC, it appears that investors place comparatively stronger emphasis on both GAAP and non-GAAP earnings relative to the pre-GFC period. IBES (Model 1 and Model 2), CORE (Model 2) and CE (Model 2) are statistically significant and positive. DIFF1 is also statistically significant, but negative in relation to IBES and CORE. CON is not statistically significant. The results indicate GAAP earnings are incrementally value relevant, but negatively associated with share price when unconditional conservatism is low. Nevertheless, it appears that investors focused predominantly on the book value of equity. When unconditional conservatism is high, however, both GAAP and non-GAAP earnings are not value relevant; CON*NonGAAPE and CON*DIFF are not statistically significant. In terms of model performance, IBES models rank highest based on BIC.

In the post-GFC period, there is an observable shift in investors' focus. Investors return their focus to the book value of equity. It does not appear that investors place significant emphasis on both GAAP and non-GAAP earnings at both low and high levels of unconditional conservatism. The only exception is CON*DIFF in relation to CORE Model 1 and CE Model 2, where it is marginally significant and positive. IBES models outperform all other models tested based on BIC.

7.2.1.4.2 Model Estimation by Low and High Unconditional Conservatism

Table 7.12 shows the estimation results by low and high unconditional conservatism for the non-S&P 500 sample. In the pre-GFC period, Panel A and Panel B show all non-GAAP earnings are not statistically significant at both low and high levels of unconditional conservatism. DIFF1 and DIFF2 are also generally not statistically significant at both low and high levels of unconditional conservatism. Two exceptions are DIFF1, which is marginally significant and positive in relation to CORE at low level of unconditional conservatism and DIFF2, which is also moderately significant and positive in relation to CORE at high level of unconditional conservatism. The results show that investors are predominantly focused on the book value of equity.

During the GFC, there is some indication of a shift in investors' focus but the results are weak. In Panel C, only IBES is strongly significant and positive when unconditional conservatism is low. In Panel D, IBES, CORE and CE are statistically significant when unconditional conservatism is low. There is some weak evidence that GAAP earnings are incrementally value relevant. DIFF1 is marginally to moderately significant and negative when unconditional conservatism is low. The results show a shift in investors' focus when unconditional conservatism is low – GAAP earnings have incremental value relevance but investors appear to place greater emphasis on GAAP earnings, which are closer to, or lower than, non-GAAP earnings.

In the post-GFC period, however, the results show another shift where investors' focus appears similar to the pre-GFC period for both Model 1 and Model 2. All non-GAAP earnings are not statistically significant at both low and high levels of unconditional conservatism. DIFF1 is statistically significant and positive only in relation to CORE at high level of unconditional conservatism. DIFF2 is not statistically significant in all models.

Table 7.12: Ohlson Model: Non-S&P 500 Sector Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low Market-to-Book Ratio Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.679***	1.123	0.191	8.350***	6280	0.5895
	High	4.968***	-0.470	-9.497	6.512*	6280	0.8690
CORE	Low	0.662***	0.792	5.987**	8.095***	6280	0.5952
	High	5.137***	-1.571	8.810	5.310*	6280	0.8638
CE	Low	0.687***	1.038	-0.498	7.995***	6280	0.5913
	High	5.250***	-2.017	-4.705	5.262*	6280	0.8616
CF	Low	0.683***	0.905	0.838	8.338***	6280	0.5874
	High	5.369***	-3.588	-1.003	4.885*	6280	0.8708

Panel B: Pre-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.680***	1.103	0.167	8.357***	6280	0.5895
	High	4.984***	-0.279	-9.233	6.257*	6280	0.8686
CORE	Low	0.692***	0.040	1.881	8.277***	6280	0.5894
	High	5.020***	-1.249	18.067*	5.550*	6280	0.8662
CE	Low	0.692***	0.856	-2.230	7.482***	6280	0.5944
	High	5.251***	-1.903	-5.604	5.044*	6280	0.8616
CF	Low	0.688***	0.706	0.627	8.349***	6280	0.5873
	High	5.369***	-3.595	-1.003	4.865*	6280	0.8708

Panel C: GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.587***	1.793***	-0.520**	4.052**	1626	0.7322
	High	4.597***	-2.222	-1.152	5.730***	1626	0.6177
CORE	Low	0.589***	0.631	-1.162*	4.187***	1626	0.7239
	High	4.596***	-2.101	-2.637	5.682***	1626	0.6176
CE	Low	0.604***	0.313	-0.585	3.789**	1626	0.7185
	High	4.618***	-2.169	-0.829	5.780***	1626	0.6182
CF	Low	0.619***	-0.495	0.283	3.751**	1626	0.7249
	High	4.571***	-2.456	-1.852	5.834***	1626	0.6187

Panel D: GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.590***	1.971***	-0.087	4.033**	1626	0.7308
	High	4.596***	-2.260	-1.939	5.685***	1626	0.6187
CORE	Low	0.597***	0.891*	-0.186	4.016**	1626	0.7206
	High	4.596***	-2.004	-3.028	5.620***	1626	0.6188
CE	Low	0.605***	0.531*	-0.068	3.790**	1626	0.7176
	High	4.590***	-2.174	-2.381	5.641***	1626	0.6187
CF	Low	0.620***	-0.313	0.442	3.861**	1626	0.7265
	High	4.572***	-2.585	-1.977	5.826***	1626	0.6198

Panel E: Post-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.715^{***}	1.021	-1.899	3.871^{*}	3567	0.7942
	High	3.631^{***}	6.087	-0.255	7.729^{***}	3567	0.6739
CORE	Low	0.720^{***}	-0.917	0.580	3.929^{*}	3567	0.7898
	High	3.761^{***}	4.072	8.230^{*}	7.609^{***}	3567	0.6638
CE	Low	0.720^{***}	-0.928	-1.986	3.801^{*}	3567	0.7925
	High	3.781^{***}	3.738	3.588	7.625^{***}	3567	0.6606
CF	Low	0.724^{***}	-0.369	-0.738	3.961^{*}	3567	0.7896
	High	3.756^{***}	3.403	4.180	7.662^{***}	3567	0.6632

Panel F: Post-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.703^{***}	1.532	-1.097	3.964^{*}	3567	0.7911
	High	3.638^{***}	5.956	-0.507	7.712^{***}	3567	0.6740
CORE	Low	0.711^{***}	-1.050	3.074	4.104^{**}	3567	0.7968
	High	3.884^{***}	1.879	1.144	7.556^{***}	3567	0.6557
CE	Low	0.707^{***}	-0.309	-1.453	3.844^{**}	3567	0.7902
	High	3.837^{***}	1.745	-2.582	7.030^{***}	3567	0.6581
CF	Low	0.714^{***}	0.193	-0.195	4.066^{*}	3567	0.7885
	High	3.869^{***}	1.424	2.093	7.569^{***}	3567	0.6575

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON quintile is Low if market-to-book (MTB) ratio quintile is 1 and High if MTB ratio quintile is 5. Low and High indicate low unconditional conservatism and high unconditional conservatism, respectively.

For firms not included in the S&P 500 index, the results show that GAAP earnings have incremental value relevance. However, the results of the impact of the GFC and a change in investor's focus are weak. Generally, investors appear to focus primarily on the book value of equity in both the pre- and post-GFC periods. During the GFC, investors appear to find IBES, CORE and CE value relevant when unconditional conservatism is low but not in the pre- and post-GFC periods.

7.2.2 Conditional Conservatism – Asymmetric Timeliness Measure

7.2.2.1 Financial Sector Sample

7.2.2.1.1 Model Estimation with Main Effects and Interaction Terms

Table 7.13 presents the estimation results of the conditional conservatism models with main effects and interaction variables for firms in the financial sector. All models are statistically significant across all period windows.

Table 7.13: Ohlson Model: Financial Sector Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with Asymmetric Timeliness Measure Dummy and Interaction Terms as Controls

$$\text{Model 1: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 Con_{it} + \beta_5 Con * BV_{it} + \beta_6 Con * NonGAAPE_{it} + \beta_7 Con * DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 Con_{it} + \beta_5 Con * BV_{it} + \beta_6 Con * NonGAAPE_{it} + \beta_7 Con * DIFF2_{it} + \varepsilon_{it}$$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.513***	1.528***	1.496***	1.557***	1.556***	1.567***	1.536***	1.564***
	(20.26)	(21.55)	(30.65)	(32.99)	(26.04)	(23.46)	(23.40)	(24.98)
NonGAAPE	2.289	1.837	1.844*	0.828	1.408	0.855	1.357	0.482
	(1.24)	(1.01)	(2.33)	(0.81)	(1.81)	(1.09)	(1.29)	(0.45)
DIFF	0.525	-0.650	12.813	1.220	4.998**	2.956	1.577	0.701
	(0.61)	(-0.68)	(1.18)	(0.24)	(3.11)	(0.96)	(1.58)	(0.73)
CON	12.077**	12.069**	12.131**	11.928**	11.467**	11.626*	12.642**	12.408**
	(2.71)	(2.75)	(2.63)	(2.62)	(2.58)	(2.57)	(3.12)	(3.00)
CON*BV	-1.023***	-1.025***	-0.987***	-1.037***	-1.056***	-1.056***	-1.046***	-1.058***
	(-10.80)	(-11.55)	(-11.91)	(-12.69)	(-12.89)	(-12.06)	(-12.55)	(-12.83)
CON*NonGAAPE	5.726	5.849	5.989	6.673	5.810	5.957	4.903	5.771
	(1.07)	(1.10)	(1.29)	(1.49)	(1.46)	(1.61)	(1.40)	(1.65)
CON*DIFF	3.395*	4.953	-9.113	2.730	-3.010	-2.467	5.322	6.252
	(2.07)	(1.72)	(-0.82)	(0.45)	(-1.48)	(-0.69)	(1.46)	(1.71)
Intercept	8.944**	8.836**	8.630**	8.778**	9.051**	8.811**	8.873**	8.705**
	(2.91)	(2.91)	(2.58)	(2.68)	(2.89)	(2.83)	(2.80)	(2.76)
N	1232	1232	1232	1232	1232	1232	1232	1232
Adj R^2	0.9401	0.9401	0.9417	0.9393	0.9405	0.9395	0.9405	0.9403
BIC	11998	12013	11972	12014	12004	12024	11996	12007
BIC Rank	3	6	1	7	4	8	2	5

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.965***	0.966***	1.144***	1.145***	1.068***	1.072***	1.089***	1.088***
	(26.63)	(26.53)	(29.31)	(28.39)	(37.90)	(43.94)	(29.95)	(30.30)
NonGAAPE	7.656***	7.642***	0.647	0.622	1.361	1.436	1.786	1.829
	(4.27)	(4.27)	(0.48)	(0.46)	(0.94)	(0.96)	(1.22)	(1.24)
DIFF	0.091	0.163	3.848***	3.992***	-9.663	-9.109	1.585	1.630
	(0.10)	(0.17)	(9.86)	(6.61)	(-1.69)	(-1.44)	(1.03)	(1.06)
CON	-5.580	-5.463	-6.854	-6.764	-4.808	-5.488	-5.750	-5.616
	(-1.45)	(-1.43)	(-1.39)	(-1.42)	(-1.07)	(-1.24)	(-1.11)	(-1.09)
CON*BV	0.173*	0.182*	0.049	0.075	0.049	0.074	0.046	0.051
	(2.23)	(2.39)	(0.50)	(0.83)	(0.57)	(0.73)	(0.48)	(0.54)
CON*NonGAAPE	-6.913***	-6.908***	-0.008	0.005	-0.481	-0.536	-1.296	-1.271
	(-3.97)	(-4.00)	(-0.01)	(0.00)	(-0.31)	(-0.34)	(-0.78)	(-0.76)
CON*DIFF	1.003	1.207*	-0.820**	-0.111	8.078	11.619	-0.641	-0.619
	(1.83)	(2.28)	(-2.68)	(.)	(1.34)	(1.41)	(-0.38)	(-0.37)
Intercept	10.014***	10.019***	9.715**	9.598**	9.774**	9.973**	10.824**	10.793**
	(3.41)	(3.40)	(2.77)	(2.73)	(3.17)	(3.19)	(3.23)	(3.22)
N	492	492	492	492	492	492	492	492
Adj R^2	0.8998	0.9005	0.8983	0.9009	0.8975	0.8971	0.9004	0.9010
BIC	4780	4777	4794	4788	4804	4800	4784	4781
BIC Rank	2	1	6	5	8	7	4	3

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	0.830***	0.824***	0.827***	0.822***	0.824***	0.820***	0.825***	0.821***
	(37.75)	(31.00)	(36.11)	(30.74)	(33.02)	(30.26)	(33.40)	(30.40)
NonGAAPE	1.222	1.264	0.811	0.928	0.242	0.483	0.291	0.512
	(0.78)	(0.80)	(0.68)	(0.74)	(0.25)	(0.43)	(0.30)	(0.46)
DIFF	-1.475	-0.717	-0.919	-0.319	0.065	0.367	0.293	0.515
	(-0.95)	(-0.47)	(-0.90)	(-0.26)	(0.07)	(0.31)	(0.30)	(0.46)
CON	-10.788*	-10.988*	-11.018*	-11.040*	-11.515*	-11.019*	-11.297*	-11.431*
	(-2.44)	(-2.43)	(-2.46)	(-2.44)	(-2.55)	(-2.48)	(-2.47)	(-2.46)
CON*BV	0.121	0.127	0.127	0.131	0.138	0.157	0.144	0.149
	(1.30)	(1.25)	(1.34)	(1.30)	(1.39)	(1.51)	(1.48)	(1.39)
CON*NonGAAPE	5.617*	5.277*	5.855**	5.616**	5.678***	4.433**	5.247***	4.476**
	(2.37)	(2.20)	(2.71)	(2.58)	(3.88)	(2.76)	(4.24)	(2.78)
CON*DIFF	5.393**	3.677**	4.054*	1.616**	4.541*	9.873*	5.278***	4.579**
	(2.60)	(3.20)	(2.41)	(3.24)	(2.22)	(2.40)	(4.05)	(2.70)
Intercept	10.813***	10.947***	11.128***	11.182***	11.393***	11.370***	11.350***	11.341***
	(4.24)	(4.16)	(4.28)	(4.24)	(4.29)	(4.32)	(4.27)	(4.29)
N	1158	1158	1158	1158	1158	1158	1158	1158
Adj R^2	0.8697	0.8665	0.8692	0.8670	0.8672	0.8636	0.8666	0.8628
BIC	10517	10544	10521	10533	10538	10569	10529	10562
BIC Rank	1	6	2	4	5	8	3	7

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON = 1 if asymmetric timeliness (AT) measure quintile is 5 and 0 if AT measure quintile is 1. CON*BV = Interaction term of AT measure with book value of common equity per share. CON*NonGAAPE = Interaction term of AT measure with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. CON*DIFF = Interaction term of AT measure with the corresponding DIFF measure of DIFF1 and DIFF2.

In the pre-GFC period, BV is strongly significant in all models. NonGAAPE is generally not statistically significant. An exception is CORE, which is marginally significant and positive in Model 1. DIFF is only moderately significant and positive in relation to CE Model 1. CON is moderately significant in all models.

These results indicate that when conditional conservatism is low, investors focus predominantly on the book value of equity. Furthermore, a high level of conditional conservatism is positively associated with share price. In contrast, when conditional conservatism is high, investors place decreased emphasis on the book value of equity; the coefficient of CON*BV is negative. However, a high level of conditional conservatism appears to have little impact on the emphasis investors place on both GAAP and non-GAAP earnings. The interaction terms, CON*DIFF and CON*NonGAAPE are generally not statistically significant in all models except

CON*DIFF in relation to IBES Model 1, where it is marginally significant and positive. Based on BIC, CORE Model 1 and CF Model 1 perform best among the models tested.

During the GFC, there is an observable shift in investors' focus. Investors maintain their focus predominantly on the book value of equity. When conditional conservatism is low, IBES is strongly significant and positive, but CORE, CE and CF are not statistically significant. GAAP earnings are incrementally value relevant only in relation to CORE when conditional conservatism is low. CON is not statistically significant. High conditional conservatism appears to have little impact on the value relevance of CE and CF; all interaction terms are not statistically significant in relation to these non-GAAP earnings. CON*BV is marginally significant and positive while CON*NonGAAPE is strongly significant and negative only in relation to IBES. CON*DIFF is marginally significant and positive in relation to IBES Model 1, but is moderately significant and negative in relation to CORE Model 1.[26] Overall, investors are focused predominantly on the book value of equity during the GFC. However, there is some evidence that IBES and CORE are value relevant and that GAAP earnings are incrementally value relevant in relation to these non-GAAP earnings. In terms of model performance, IBES models perform best among the models tested.

In the post-GFC period, BV is strongly significant in all models. NonGAAPE and DIFF are not statistically significant in all models. CON is marginally significant and negative in all models. The results for NonGAAPE and DIFF when conditional conservatism is low in the post-GFC period are generally similar to the corresponding results in the pre-GFC period. Interestingly, the negative sign for CON indicate that conditional conservatism is negatively related to share price. An explanation is that financial firms experienced a significant negative impact as a result of the GFC. Investors may perceive financial firms to be overestimating their losses.

The results also indicate both GAAP and non-GAAP earnings are value relevant when conditional conservatism is high. CON*NonGAAPE and CON*DIFF are statistically significant and positive in all models. However, the high level of conditional conservatism does not appear to have an impact on the emphasis investors place on the book value of equity. Overall, there is evidence of a shift in investors' focus on GAAP

[26] I estimate clustered robust standard errors in my models, clustering on both firm and time. However, in the case of financial firms in the GFC period, the estimated covariance matrix of moment conditions is not of full rank and the robust covariance matrix could not be calculated. I re-estimated my models for firms in the financial sector in the GFC period clustering only on a single dimension, firm. In untabulated results, the inferences are substantially the same.

and non-GAAP earnings across time. Nevertheless, the results strongly show that investors focus predominantly on the book value of equity in valuing financial firms.

7.2.2.1.2 Model Estimation by Low and High Conditional Conservatism

The estimation results by low and high conditional conservatism for the financial sector sample is presented in Table 7.14. All non-GAAP earnings are not statistically significant at both low and high levels of conditional conservatism except for CORE, which is marginally significant at the low level of conditional conservatism in Model 1.

Both DIFF1 and DIFF2 are also not statistically significant at both levels of conditional conservatism except DIFF1, which is moderately significant when conditional conservatism is low in relation to CE. In contrast to the results of unconditional conservatism, investors do not appear to find non-GAAP or GAAP earnings value relevant when conditional conservatism is low or high. Interestingly, the magnitude of BV is consistently higher when conditional conservatism is low in comparison to when conditional conservatism is high in relation to all non-GAAP earnings.

During the GFC, only IBES is strongly significant and positive when conditional conservatism is low for both Model 1 and Model 2. All other non-GAAP earnings are not statistically significant. DIFF1 and DIFF2 are only statistically significant and positive in relation to CORE at both low and high levels of conditional conservatism.

In the post-GFC period, there is a discernible shift in investors' focus. All non-GAAP earnings are statistically significant and positive at high level of conditional conservatism. Similarly, DIFF1 and DIFF2 are also statistically significant and positive at moderate high level of conditional conservatism, except for DIFF2 in relation to CORE.

The results for financial firms show a shift in investors' emphasis between the GFC and post-GFC period. In the post-GFC period, investors find non-GAAP earnings value relevant when conditional conservatism is relatively high. Furthermore, GAAP earnings also have incremental value relevance at high level of conditional conservatism.

Table 7.14: Ohlson Model: Financial Sector Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low Asymmetric Timeliness Measure Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.513***	2.289	0.526	8.968**	615	0.9495
	High	0.490***	8.014	3.920	21.020***	616	0.7391
CORE	Low	1.496***	1.844*	12.811	8.653*	615	0.9512
	High	0.510***	7.833	3.700	20.760***	616	0.7398
CE	Low	1.556***	1.409	4.999**	9.076**	615	0.9498
	High	0.500***	7.218	1.988	20.518***	616	0.7425
CF	Low	1.536***	1.357	1.577	8.897**	615	0.9497
	High	0.491***	6.259	6.899	21.515***	616	0.7458

Panel B: Pre-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.528***	1.837	-0.650	8.860**	615	0.9496
	High	0.503***	7.686	4.303	20.905***	616	0.7387
CORE	Low	1.557***	0.828	1.218	8.802**	615	0.9487
	High	0.520***	7.502	3.951	20.706***	616	0.7390
CE	Low	1.567***	0.855	2.957	8.835**	615	0.9488
	High	0.511***	6.812	0.489	20.437***	616	0.7417
CF	Low	1.564***	0.483	0.701	8.729**	615	0.9493
	High	0.506***	6.253	6.953	21.112***	616	0.7495

Panel C: GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.965***	7.656***	0.091	10.014***	246	0.9328
	High	1.138***	0.744	1.095	4.434	246	0.8724
CORE	Low	1.144***	0.647	3.848***	9.715**	246	0.9239
	High	1.193***	0.638	3.028***	2.861	246	0.8772
CE	Low	1.068***	1.361	-9.663	9.774**	246	0.9266
	High	1.117***	0.879	-1.585	4.966	246	0.8733
CF	Low	1.089***	1.786	1.585	10.824**	246	0.9222
	High	1.135***	0.491	0.943	5.073	246	0.8825

Panel D: GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.966***	7.642***	0.163	10.019***	246	0.9328
	High	1.147***	0.733	1.370	4.556	246	0.8737
CORE	Low	1.145***	0.622	3.992***	9.598**	246	0.9244
	High	1.220***	0.627	3.882***	2.834	246	0.8814
CE	Low	1.072***	1.436	-9.109	9.973**	246	0.9258
	High	1.146***	0.900	2.510	4.485	246	0.8732
CF	Low	1.088***	1.829	1.630	10.793**	246	0.9224
	High	1.139***	0.558	1.011	5.177	246	0.8834

Panel E: Post-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.830***	1.222	-1.475	10.813***	579	0.8718
	High	0.951***	6.839***	3.919***	0.024	579	0.8674
CORE	Low	0.827***	0.811	-0.919	11.128***	579	0.8714
	High	0.954***	6.666***	3.135*	0.110	579	0.8668
CE	Low	0.824***	0.242	0.065	11.393***	579	0.8708
	High	0.962***	5.921***	4.605**	-0.122	579	0.8633
CF	Low	0.825***	0.291	0.293	11.350***	579	0.8707
	High	0.969***	5.537***	5.571***	0.052	579	0.8622

Panel F: Post-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.824***	1.264	-0.717	10.947***	579	0.8715
	High	0.950***	6.541***	2.960**	-0.041	579	0.8612
CORE	Low	0.822***	0.928	-0.319	11.182***	579	0.8712
	High	0.953***	6.543***	1.297	0.141	579	0.8624
CE	Low	0.820***	0.483	0.367	11.370***	579	0.8709
	High	0.977***	4.916***	10.239**	0.350	579	0.8557
CF	Low	0.821***	0.512	0.515	11.341***	579	0.8708
	High	0.970***	4.987***	5.094***	-0.090	579	0.8541

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON quintile is Low if asymmetric timeliness (AT) measure quintile is 1 and High if AT measure quintile is 5. Low and High indicate low conditional conservatism and high conditional conservatism, respectively.

7.2.2.2 Non-Financial Sector Sample

7.2.2.2.1 Model Estimation with Main Effects and Interaction Terms

Table 7.15 presents the estimation results of the conditional conservatism models with main effects and interaction variables for firms not in the financial sector. All models are statistically significant across all period windows.

In the pre-GFC period, BV is strongly significant in all models. NonGAAPE is strongly significant in relation to IBES (Models 1 and 2), CORE (Model 1), CE (Model 1) and CF (Model 1). DIFF is statistically significant in relation to CORE (Model 1), CE (Models 1 and 2) and CF (Model 1).

Table 7.15: Ohlson Model: Non-Financial Sector Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with Asymmetric Timeliness Measure Dummy and Interaction Terms as Controls

$$\text{Model 1: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 Con_{it} + \beta_5 Con*BV_{it} + \beta_6 Con*NonGAAPE_{it} + \beta_7 Con*DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 Con_{it} + \beta_5 Con*BV_{it} + \beta_6 Con*NonGAAPE_{it} + \beta_7 Con*DIFF2_{it} + \varepsilon_{it}$$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.188***	1.180***	1.315***	1.527***	1.296***	1.667***	1.307***	1.617***
	(5.89)	(5.76)	(6.80)	(5.77)	(6.69)	(5.47)	(6.84)	(5.69)
NonGAAPE	14.395***	14.424***	12.115***	7.699	12.320***	5.551	11.321***	5.051
	(3.91)	(3.88)	(3.36)	(1.79)	(3.32)	(1.84)	(3.43)	(1.91)
DIFF	3.610	0.271	12.477**	0.897	11.724***	7.213*	12.376**	5.917
	(1.30)	(0.29)	(3.24)	(0.85)	(3.44)	(2.30)	(3.23)	(1.87)
CON	-6.445	-7.208*	-7.098**	-6.349*	-6.935**	-5.180	-7.081**	-5.661*
	(-1.88)	(-2.37)	(-2.81)	(-2.40)	(-2.69)	(-1.62)	(-2.73)	(-1.98)
CON*BV	0.672	0.713*	0.997***	0.817**	1.046***	0.727*	1.009***	0.720*
	(1.91)	(2.20)	(3.72)	(2.80)	(3.92)	(2.35)	(3.69)	(2.30)
CON*NonGAAPE	2.044	2.191	-5.285	-1.865	-5.252	-0.040	-4.249	0.533
	(0.81)	(0.87)	(-0.97)	(-0.34)	(-0.97)	(-0.01)	(-0.86)	(0.15)
CON*DIFF	-13.404*	-6.844	-4.019	1.588	-2.694	2.188	-5.548	-0.595
	(-2.33)	(-1.84)	(-0.68)	(0.68)	(-0.46)	(0.40)	(-1.03)	(-0.16)
Intercept	9.808***	9.887***	9.191***	8.924***	9.242***	8.412**	9.236***	8.377**
	(4.69)	(4.69)	(4.03)	(3.31)	(4.09)	(2.79)	(4.11)	(2.83)
N	9988	9988	9988	9988	9988	9988	9988	9988
Adj R^2	0.7777	0.7749	0.7321	0.7142	0.7327	0.7098	0.7346	0.7102
BIC	89737	89859	91600	92244	91577	92396	91497	92376
BIC Rank	1	2	5	6	4	8	3	7

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.367***	1.360***	1.526***	1.539***	1.510***	1.619***	1.518***	1.586***
	(3.78)	(3.72)	(4.57)	(4.70)	(4.49)	(4.54)	(4.43)	(4.65)
NonGAAPE	10.706***	10.810***	5.822	5.577*	5.835	4.840*	5.572	4.173*
	(4.01)	(3.96)	(1.82)	(2.04)	(1.76)	(2.39)	(1.79)	(2.06)
DIFF	-2.666	0.174	0.608	2.036	5.600	10.469*	6.260*	4.778*
	(-1.75)	(0.19)	(0.12)	(1.66)	(1.22)	(2.05)	(2.00)	(2.31)
CON	1.957	2.485	1.788	2.484	2.239	1.754	1.929	3.170
	(0.40)	(0.51)	(0.37)	(0.51)	(0.47)	(0.44)	(0.38)	(0.62)
CON*BV	-0.054	-0.024	-0.171	-0.145	-0.198	-0.224	-0.167	-0.171
	(-0.14)	(-0.06)	(-0.47)	(-0.41)	(-0.55)	(-0.58)	(-0.46)	(-0.47)
CON*NonGAAPE	-1.421	-2.206	1.611	0.922	1.513	-0.473	1.153	-0.411
	(-1.01)	(-1.29)	(0.59)	(0.39)	(0.56)	(-0.26)	(0.45)	(-0.24)
CON*DIFF	6.241*	1.977	4.398	-0.309	-0.012	-6.533	1.137	-0.474
	(2.38)	(1.85)	(1.03)	(-0.27)	(-0.00)	(-1.21)	(0.43)	(-0.25)
Intercept	6.627	6.683	7.300	7.231	7.068	8.438*	7.008	7.026
	(1.37)	(1.39)	(1.57)	(1.55)	(1.53)	(2.29)	(1.43)	(1.46)
N	3637	3637	3637	3637	3637	3637	3637	3637
Adj R^2	0.6681	0.6682	0.6468	0.6468	0.6477	0.6422	0.6483	0.6422
BIC	33318	33326	33552	33569	33560	33608	33545	33608
BIC Rank	1	2	4	6	5	7	3	7

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.332***	1.319***	1.735***	1.755***	1.786***	1.876***	1.740***	1.765***
	(4.43)	(4.37)	(5.25)	(5.60)	(5.36)	(5.59)	(5.29)	(5.66)
NonGAAPE	20.786***	21.084***	3.473	3.026	3.633	2.233	3.669	2.796
	(6.96)	(7.10)	(0.68)	(0.61)	(0.70)	(0.58)	(0.73)	(0.75)
DIFF	-5.847***	-4.492*	4.403	-1.079	8.591	11.500	3.423	2.537
	(-3.75)	(-2.49)	(1.13)	(-0.60)	(1.61)	(1.64)	(0.65)	(0.65)
CON	5.857	5.847	4.450	5.111	3.594	1.906	4.499	4.830
	(1.27)	(1.27)	(0.91)	(1.02)	(0.85)	(0.60)	(0.90)	(0.96)
CON*BV	-0.647	-0.630	-0.909*	-0.755*	-0.995**	-0.910*	-0.916*	-0.666
	(-1.87)	(-1.81)	(-2.47)	(-2.14)	(-2.61)	(-2.14)	(-2.49)	(-1.95)
CON*NonGAAPE	4.464	4.038	15.826*	9.469	15.691*	7.349	15.444*	6.906
	(0.60)	(0.54)	(2.02)	(1.31)	(2.01)	(1.34)	(2.00)	(1.29)
CON*DIFF	8.882**	4.670	16.565	2.801	8.889	-8.088	16.159*	6.840
	(3.07)	(1.74)	(1.84)	(0.75)	(1.06)	(-0.80)	(2.04)	(1.23)
Intercept	3.427	3.268	6.105	6.157	6.882	8.220**	6.101	6.250
	(0.80)	(0.76)	(1.34)	(1.34)	(1.77)	(2.94)	(1.31)	(1.35)
N	8192	8192	8192	8192	8192	8192	8192	8192
Adj R^2	0.6912	0.6899	0.6252	0.5982	0.6285	0.5945	0.6255	0.5883
BIC	77292	77327	78880	79450	78806	79523	78863	79639
BIC Rank	1	2	5	6	3	7	4	8

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON = 1 if asymmetric timeliness (AT) measure quintile is 5 and 0 if AT measure quintile is 1. CON*BV = Interaction term of AT measure with book value of common equity per share. CON*NonGAAPE = Interaction term of AT measure with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. CON*DIFF = Interaction term of AT measure with the corresponding DIFF measure of DIFF1 and DIFF2.

These results show non-GAAP earnings are generally value relevant when conditional conservatism is low. Furthermore, GAAP earnings are incrementally value relevant when conditional conservatism is low. Generally, CON is marginally to moderately significant and negative, indicating conditional conservatism is negatively related to share price.

As noted previously, conditional conservatism may be negatively related to unconditional conservatism. My results of a negative coefficient for CON are consistent with this proposition. Furthermore, the generally significant and positive CON*BV indicates that investors place increased focus on the book value of equity when conditional conservatism is high. Investors appear to focus predominantly on the book value of equity, commonly used in measuring unconditional conservatism, which may explain the negative association with conditional conservatism. A high level of conditional conservatism does not appear to have an impact on the emphasis investors place on both GAAP and non-GAAP earnings. In terms of model performance, IBES outperform all other models tested.

During the GFC, BV remains strongly significant. NonGAAPE is generally statistically significant and positive, indicating non-GAAP earnings are generally value relevant when conditional conservatism is low. In contrast, DIFF is only marginally significant in relation to CE and CF. CON is not statistically significant. Furthermore, the interaction terms are generally not statistically significant in all models. The results suggests that the level of conditional conservatism has no impact on the emphasis investors place on the book value of equity and both GAAP and non-GAAP earnings in valuing a firm not in the financial sector during the GFC.

In the post-GFC period, there is a shift in investors' focus on earnings. Investors continue to focus predominantly on the book value of equity when conditional conservatism is low. However, when conditional conservatism is high, investors appear to place decreased emphasis on the book value of equity. CON*BV is marginally significant and negative in relation to CORE, CE and CF. In contrast, a high level of conditional conservatism does not appear to have an impact on non-GAAP earnings in relation to IBES. Furthermore, the results for IBES show GAAP earnings are incrementally value relevant and negatively associated with share price when conditional conservatism is low. It appears investors place greater emphasis on GAAP earnings, which are generally closer to, or lower than, non-GAAP earnings when conditional conservatism is low. However, when conditional conservatism is high, GAAP earnings is also incrementally value relevant but positively associated with share price. Based on BIC, IBES models perform best among the models tested.

7.2.2.2.2 Model Estimation by Low and High Conditional Conservatism

Table 7.16 show the results for the non-financial sector sample. All non-GAAP earnings are significant at low to moderate levels of conditional conservatism in both Model 1 and Model 2.

Table 7.16: Ohlson Model: Non-Financial Sector Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low Asymmetric Timeliness Measure Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.188***	14.396***	3.609	9.816***	4989	0.6757
	High	1.860***	16.439***	-9.797*	3.364	4986	0.8087
CORE	Low	1.315***	12.116***	12.477**	9.198***	4989	0.6554
	High	2.312***	6.833	8.419	2.089	4986	0.7550
CE	Low	1.296***	12.320***	11.724***	9.249***	4989	0.6560
	High	2.342***	7.069	9.021	2.302	4986	0.7556
CF	Low	1.307***	11.322***	12.376**	9.243***	4989	0.6660
	High	2.316***	7.076	6.831	2.149	4986	0.7550

Panel B: Pre-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.180***	14.425***	0.271	9.895***	4989	0.6729
	High	1.893***	16.620***	-6.592*	2.684	4986	0.8060
CORE	Low	1.527***	7.699	0.897	8.931***	4989	0.5932
	High	2.344***	5.855	2.451	2.561	4986	0.7510
CE	Low	1.666***	5.551	7.214*	8.418**	4989	0.5725
	High	2.394***	5.523	9.417	3.223	4986	0.7517
CF	Low	1.616***	5.052	5.917	8.383**	4989	0.5777
	High	2.337***	5.596	5.333	2.706	4986	0.7505

Panel C: GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.366***	10.713***	-2.665	6.644	1814	0.6072
	High	1.313***	9.285***	3.575**	8.585***	1817	0.7220
CORE	Low	1.526***	5.825	0.605	7.313	1814	0.5787
	High	1.355***	7.433***	5.006	9.088***	1817	0.7071
CE	Low	1.510***	5.838	5.605	7.081	1814	0.5760
	High	1.313***	7.347***	5.588*	9.307***	1817	0.7111
CF	Low	1.518***	5.575	6.262*	7.020	1814	0.5802
	High	1.351***	6.725**	7.397***	8.935***	1817	0.7085

Panel D: GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.360***	10.816***	0.174	6.699	1814	0.6054
	High	1.336***	8.604***	2.151***	9.170***	1817	0.7237
CORE	Low	1.539***	5.580*	2.035	7.244	1814	0.5797
	High	1.394***	6.499***	1.727**	9.717***	1817	0.7061
CE	Low	1.619***	4.842*	10.479*	8.452*	1814	0.5824
	High	1.395***	4.367***	3.936	10.193***	1817	0.6948
CF	Low	1.586***	4.175*	4.779*	7.037	1814	0.5808
	High	1.415***	3.762**	4.304***	10.197***	1817	0.6964

Panel E: Post-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.332***	20.787***	-5.847***	3.424	4095	0.7155
	High	0.685***	25.248***	3.034	9.280***	4095	0.6440
CORE	Low	1.735***	3.474	4.405	6.102	4095	0.6397
	High	0.827***	19.297**	20.966**	10.551***	4095	0.5895
CE	Low	1.786***	3.634	8.594	6.879	4095	0.6444
	High	0.792***	19.323**	17.480*	10.471***	4095	0.5911
CF	Low	1.740***	3.669	3.424	6.098	4095	0.6400
	High	0.824***	19.110**	19.581**	10.594***	4095	0.5900

Panel F: Post-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.319***	21.085***	-4.492*	3.264	4095	0.7141
	High	0.689***	25.120***	0.178	9.111***	4095	0.6427
CORE	Low	1.755***	3.027	-1.079	6.154	4095	0.6392
	High	0.999***	12.494*	1.722	11.262***	4095	0.5229
CE	Low	1.877***	2.234	11.505	8.217**	4095	0.6459
	High	0.967***	9.581*	3.420	10.123***	4095	0.5042
CF	Low	1.765***	2.796	2.537	6.248	4095	0.6385
	High	1.099***	9.700*	9.376*	11.074***	4095	0.4995

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON quintile is Low if asymmetric timeliness (AT) measure quintile is 1 and High if AT measure quintile is 5. Low and High indicate low conditional conservatism and high conditional conservatism, respectively.

IBES is statistically significant at both low and high level of conditional conservatism in both models. However, CORE, CE and CF are only statistically significant at the low level of conditional conservatism in Model 1. DIFF1 is statistically significant and positive at the low level of conditional conservatism in relation to CORE, CE and CF but is statistically significant and negative at the high level of conditional conservatism in relation to IBES. DIFF2, however, is only marginally significant and negative in relation to IBES at the high level of conditional conservatism and marginally significant and positive at the low level of conditional conservatism in relation to CE.

There is some evidence that non-GAAP earnings are value relevant. There is also some evidence that the incremental value relevance of GAAP earnings is in contrast when conditional conservatism is low in comparison to when conditional conservatism is high. However, it appears that investors are focused predominantly on the book value of equity.

In Panels C and D, the results for the GFC period are mixed. All non-GAAP earnings are statistically significant across both low and high levels of conditional conservatism in relation to Model 2. In Model 1, however, IBES is statistically significant at both low and high levels of conditional conservatism but CORE, CE and CF are only statistically significant at the high level of conditional conservatism. GAAP earnings generally have incremental information content in relation non-GAAP earnings.

The results for the post-GFC period show some evidence of a shift in investors' focus. In both Model 1 and Model 2, IBES is strongly significant at both high and low levels of conditional conservatism. CORE, CE and CF are statistically significant at the high level of conditional conservatism in both Model 1 and Model 2. DIFF1 is statistically significant and positive at the high level of conditional conservatism in relation to CORE, CE and CF but is statistically significant and negative at the low level of conditional conservatism in relation to IBES. The results of DIFF2 in relation to IBES and CF are generally similar to DIFF1. DIFF2 is not significant in relation to CORE and CE.

The results for the post-GFC period show that GAAP earnings are incrementally value relevant. They also show a shift in investors' focus from the earlier periods and are consistent with higher levels of conservatism being associated with higher firm value. When conditional conservatism is low, investors appear to place greater emphasis on GAAP earnings.

7.2.2.3 S&P 500 Sample

7.2.2.3.1 Model Estimation with Main Effects and Interaction Terms

The estimation results of the conditional conservatism models with main effects and interaction variables for firms in the S&P 500 index are presented in Table 7.17. All models are statistically significant across all period windows.

In the pre-GFC period, BV is strongly significant in all models. NonGAAPE and CON, however, are not statistically significant. DIFF is only statistically significant in relation to CORE (Models 1 and 2) and CE (Model 2). These results indicate investors focus predominantly on the book value of equity. High conditional conservatism does not appear to have an impact on the emphasis investors place on the book value of equity.

Table 7.17: Ohlson Model: S&P 500 Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with Asymmetric Timeliness Measure Dummy and Interaction Terms as Controls

$$\text{Model 1: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 Con_{it} + \beta_5 Con * BV_{it} + \beta_6 Con * NonGAAPE_{it} + \beta_7 Con * DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 Con_{it} + \beta_5 Con * BV_{it} + \beta_6 Con * NonGAAPE_{it} + \beta_7 Con * DIFF2_{it} + \varepsilon_{it}$$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	1.543***	1.557***	1.547***	1.619***	1.546***	1.614***	1.543***	1.595***
	(10.58)	(10.29)	(11.92)	(23.74)	(12.39)	(29.78)	(12.23)	(29.59)
NonGAAPE	1.412	1.042	1.287	-0.547	1.449	-0.017	1.409	-0.034
	(0.40)	(0.27)	(0.44)	(-0.40)	(0.53)	(-0.02)	(0.51)	(-0.03)
DIFF	1.382	-0.524	3.008***	10.062*	2.472	3.941*	1.409	-0.023
	(0.55)	(-0.71)	(7.33)	(2.10)	(1.00)	(2.24)	(0.50)	(-0.02)
CON	-2.864	-3.040	-2.400	-1.309	-2.466	-2.039	-2.545	-1.773
	(-0.77)	(-0.81)	(-0.63)	(-0.32)	(-0.69)	(-0.48)	(-0.67)	(-0.42)
CON*BV	-0.518	-0.499	-0.480	-0.243	-0.456	-0.030	-0.474	-0.094
	(-1.87)	(-1.76)	(-1.87)	(-0.98)	(-1.82)	(-0.13)	(-1.87)	(-0.39)
CON*NonGAAPE	15.447**	15.238**	14.287**	9.631**	14.844***	4.965**	13.972**	4.936*
	(2.79)	(2.64)	(3.22)	(3.18)	(3.41)	(2.69)	(3.26)	(2.57)
CON*DIFF	6.870***	0.178	13.542***	-17.124**	17.720***	7.497	14.085**	5.039**
	(3.41)	(0.21)	(4.19)	(-3.10)	(3.38)	(1.60)	(3.28)	(2.69)
Intercept	15.467***	15.482***	15.202***	15.051***	15.655***	16.737***	15.466***	15.549***
	(7.99)	(7.70)	(7.72)	(7.24)	(7.70)	(7.55)	(7.76)	(7.82)
N	2242	2242	2242	2242	2242	2242	2242	2242
Adj R^2	0.9340	0.9335	0.9340	0.9330	0.9347	0.9302	0.9338	0.9291
BIC	20463	20477	20453	20494	20436	20585	20461	20614
BIC Rank	4	5	2	6	1	7	3	8

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	0.513***	0.513***	0.816***	0.827***	0.862***	0.958***	0.873***	0.927***
	(5.47)	(5.88)	(4.99)	(5.93)	(4.88)	(9.15)	(4.76)	(8.72)
NonGAAPE	18.643***	19.128***	9.619	9.600*	9.647	8.076*	9.524	7.696*
	(5.93)	(6.12)	(1.55)	(2.07)	(1.62)	(2.49)	(1.54)	(2.12)
DIFF	-5.661***	-0.470	0.373	2.629	9.817	14.505***	9.632	7.792*
	(-13.35)	(-0.14)	(0.04)	(0.81)	(1.71)	(3.70)	(1.59)	(2.21)
CON	-9.545***	-7.541**	-12.291***	-9.577**	-9.575**	-11.176***	-9.811**	-8.461*
	(-4.36)	(-3.06)	(-3.58)	(-3.19)	(-3.09)	(-3.40)	(-2.92)	(-2.37)
CON*BV	0.831***	0.832***	0.544*	0.526**	0.477*	0.381*	0.502*	0.438*
	(5.41)	(5.54)	(2.52)	(2.63)	(2.13)	(2.23)	(2.15)	(2.55)
CON*NonGAAPE	-12.747***	-13.223***	-5.032	-5.338	-5.157	-3.960	-5.249	-3.906
	(-5.04)	(-5.19)	(-0.85)	(-1.18)	(-0.93)	(-1.31)	(-0.92)	(-1.17)
CON*DIFF	8.518***	3.093	4.095	1.342	-7.139	-11.425*	-4.726	-3.403
	(5.83)	(1.20)	(0.44)	(0.55)	(-1.11)	(-2.56)	(-0.84)	(-1.03)
Intercept	23.186***	22.513***	26.506***	26.167***	24.331***	27.610***	24.107***	25.414***
	(9.09)	(8.45)	(8.67)	(9.44)	(8.98)	(9.21)	(8.45)	(8.30)
N	878	878	878	878	878	878	878	878
Adj R^2	0.8467	0.8471	0.8350	0.8354	0.8352	0.8354	0.8444	0.8440
BIC	8401	8405	8472	8490	8477	8476	8413	8423
BIC Rank	1	2	5	8	7	6	3	4

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	0.606*	0.607*	0.596**	0.705**	0.461*	0.582*	0.543**	0.783***
	(2.51)	(2.19)	(2.92)	(3.24)	(2.42)	(2.57)	(2.72)	(3.47)
NonGAAPE	31.597***	31.605***	26.408***	24.800***	26.623***	19.633***	26.257***	18.432***
	(3.98)	(3.80)	(3.81)	(3.75)	(3.92)	(3.68)	(3.82)	(3.35)
DIFF	-0.306	-1.690	15.415	-3.202	22.044*	10.799	27.199***	18.863**
	(-0.03)	(-0.54)	(1.37)	(-0.99)	(2.56)	(1.21)	(3.75)	(3.25)
CON	-1.996	-1.606	-5.155	-4.609	-5.731	-5.956	-5.576	-6.377
	(-0.27)	(-0.22)	(-0.89)	(-0.79)	(-0.99)	(-1.05)	(-0.93)	(-1.09)
CON*BV	0.021	0.016	0.127	0.001	0.250	0.074	0.282	0.044
	(0.07)	(0.05)	(0.50)	(0.01)	(0.79)	(0.21)	(0.97)	(0.17)
CON*NonGAAPE	-3.714	-3.161	-2.584	-0.822	-6.221	-2.299	-6.504	-0.942
	(-0.32)	(-0.27)	(-0.26)	(-0.09)	(-0.60)	(-0.28)	(-0.62)	(-0.11)
CON*DIFF	2.107	6.073	-11.112	1.583	-6.921	-2.574	-7.317	-1.466
	(0.22)	(1.30)	(-0.82)	(0.34)	(-0.63)	(-0.20)	(-0.69)	(-0.17)
Intercept	12.356	12.156	19.249***	19.194***	19.370***	22.078***	19.029***	22.739***
	(1.94)	(1.89)	(4.35)	(3.98)	(4.81)	(5.15)	(4.30)	(4.70)
N	2214	2214	2214	2214	2214	2214	2214	2214
Adj R^2	0.5832	0.5882	0.5462	0.5433	0.5248	0.4767	0.5191	0.4681
BIC	22536	22509	22724	22739	22826	23040	22845	23076
BIC Rank	2	1	3	4	5	7	6	8

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON = 1 if asymmetric timeliness (AT) measure quintile is 5 and 0 if AT measure quintile is 1. CON*BV = Interaction term of AT measure with book value of common equity per share. CON*NonGAAPE = Interaction term of AT measure with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. CON*DIFF = Interaction term of AT measure with the corresponding DIFF measure of DIFF1 and DIFF2.

However, when conditional conservatism is high, non-GAAP earnings are value relevant in all models. Furthermore, GAAP earnings are incrementally value relevant when conditional conservatism is high. In terms of model performance, CE Model 1 and CORE Model 1 perform best among the models tested.

During the GFC, there is an observable shift in investors' focus in relation to non-GAAP earnings. BV remains strongly significant in all models. Generally, non-GAAP earnings are statistically significant and positive, indicating investors find non-GAAP earnings value relevant when conditional conservatism is low. DIFF is statistically significant and negative in relation to IBES Model 1, but statistically significant and positive in relation to CE Model 2 and CF Model 2. The results provide some evidence that GAAP earnings are incrementally value relevant in relation to IBES, CE and CF. CON is statistically significant and negative in all models, indicating that conditional conservatism is negatively associated with share price. When conditional conservatism is high, investors appear to place increased emphasis on the book value of equity – CON*BV is statistically significant and positive in all models. CON*NonGAAPE is only statistically significant and negative in relation to IBES. It appears that when conditional conservatism is high, investors appear to decrease the emphasis they place on IBES in comparison to when conditional conservatism is low. There is weak evidence that GAAP earnings are incrementally value relevant when conditional conservatism is high in relation to IBES and CE. Based on BIC, IBES models outperform all other models tested.

In the post-GFC period, there is a shift in investors' focus on the book value of equity and non-GAAP earnings. While BV is statistically significant in all models, the level of significance is generally lower in comparison to the level of significance in both the pre-GFC and GFC periods. In contrast, NonGAAPE is strongly significant in all models. These results indicate a shift in investors' focus between the pre-GFC period and the post-GFC period. In the post-GFC period, investors place greater emphasis on non-GAAP earnings in comparison to the pre-GFC period. DIFF is only statistically significant in relation to CE and CF. GAAP earnings do not appear to be incrementally value relevant in relation to IBES and CORE. Furthermore, CON and all interaction terms are not statistically significant in all models. These results indicate that high conditional conservatism does not have any impact on the value relevance of book value of equity and both GAAP and non-GAAP earnings to investors. In terms of model performance, IBES models perform best among the models tested.

7.2.2.3.2 Model Estimation by Low and High Conditional Conservatism

Table 7.18 shows the estimation results by low and high conditional conservatism for the S&P 500 sample. All non-GAAP earnings are statistically significant across all levels of conditional conservatism except at low level for both Model 1 and Model 2.

The results show that GAAP earnings are generally incrementally value relevant. DIFF1 is statistically significant and positive at high level of conditional conservatism in relation to all non-GAAP earnings. DIFF1 is also significant and positive at the low level of conditional conservatism in relation to CORE.

Table 7.18: Ohlson Model: S&P 500 Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low Asymmetric Timeliness Measure Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.543***	1.412	1.382	15.467***	1121	0.9529
	High	1.025***	16.860***	8.252***	12.603***	1121	0.8088
CORE	Low	1.547***	1.287	3.008***	15.202***	1121	0.9535
	High	1.068***	15.574***	16.549***	12.801***	1121	0.8058
CE	Low	1.546***	1.449	2.472	15.655***	1121	0.9531
	High	1.090***	16.293***	20.192***	13.189***	1121	0.8135
CF	Low	1.543***	1.409	1.409	15.466***	1121	0.9529
	High	1.069***	15.381***	15.493***	12.921***	1121	0.8075

Panel B: Pre-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.557***	1.042	-0.524	15.482***	1121	0.9529
	High	1.058***	16.280***	-0.346	12.442***	1121	0.8057
CORE	Low	1.619***	-0.547	10.062*	15.051***	1121	0.9550
	High	1.376***	9.084***	-7.063**	13.742***	1121	0.7878
CE	Low	1.614***	-0.017	3.941*	16.737***	1121	0.9532
	High	1.584***	4.948*	11.438*	14.699***	1121	0.7792
CF	Low	1.595***	-0.034	-0.023	15.549***	1121	0.9528
	High	1.501***	4.902*	5.016*	13.775***	1121	0.7730

Panel C: GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.513***	18.643***	-5.661***	23.186***	439	0.7642
	High	1.344***	5.896	2.857***	13.642***	439	0.8803
CORE	Low	0.816***	9.619	0.373	26.506***	439	0.7309
	High	1.360***	4.588***	4.468***	14.215***	439	0.8773
CE	Low	0.862***	9.647	9.817	24.331***	439	0.7269
	High	1.339***	4.490***	2.679**	14.757***	439	0.8793
CF	Low	0.873***	9.524	9.632	24.107***	439	0.7270
	High	1.375***	4.275***	4.906***	14.296***	439	0.8922

Panel D: GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.513***	19.128***	-0.470	22.513***	439	0.7613
	High	1.345***	5.905	2.623***	14.971***	439	0.8820
CORE	Low	0.827***	9.600*	2.629	26.167***	439	0.7316
	High	1.353***	4.262***	3.971*	16.590***	439	0.8776
CE	Low	0.958***	8.076*	14.505***	27.610***	439	0.7314
	High	1.339***	4.116***	3.080	16.434***	439	0.8778
CF	Low	0.927***	7.696*	7.792*	25.414***	439	0.7282
	High	1.365***	3.789***	4.389***	16.953***	439	0.8911

Panel E: Post-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	0.606*	31.597***	-0.306	12.356	1107	0.4066
	High	0.627**	27.883**	1.801	10.359***	1107	0.6454
CORE	Low	0.596**	26.408***	15.415	19.249***	1107	0.3615
	High	0.723***	23.824**	4.303	14.094***	1107	0.6112
CE	Low	0.461*	26.623***	22.044*	19.370***	1107	0.3615
	High	0.711**	20.402*	15.123*	13.639***	1107	0.5820
CF	Low	0.543**	26.257***	27.199***	19.029***	1107	0.3632
	High	0.825***	19.753*	19.882*	13.453***	1107	0.5736

Panel F: Post-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	0.607*	31.605***	-1.690	12.156	1107	0.4070
	High	0.623**	28.444**	4.383	10.550***	1107	0.6522
CORE	Low	0.705**	24.800***	-3.202	19.194***	1107	0.3558
	High	0.706***	23.978**	-1.619	14.585***	1107	0.6093
CE	Low	0.582*	19.633***	10.799	22.078***	1107	0.3200
	High	0.656*	17.334*	8.225	16.122***	1107	0.5313
CF	Low	0.783***	18.432***	18.863**	22.739***	1107	0.3127
	High	0.826***	17.490*	17.397**	16.362***	1107	0.5222

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON quintile is Low if asymmetric timeliness (AT) measure quintile is 1 and High if AT measure quintile is 5. Low and High indicate low conditional conservatism and high conditional conservatism, respectively.

DIFF2 is statistically significant at both low and high levels of conditional conservatism in relation to CORE and CE. DIFF2 is also statistically significant in relation to CF at the high level of conditional conservatism. All non-GAAP earnings are statistically significant and positive at the high level of conditional conservatism but are not statistically significant at the low level of conditional conservatism in both Model 1 and Model 2

In the GFC period, CORE, CE and CF are statistically significant at the high level of conditional conservatism and IBES is statistically significant at the low level of conditional conservatism in Model 1. In Model 2, CORE, CE and CF are statistically significant and positive at both levels of conditional conservatism but IBES is only statistically significant at the low level of conditional conservatism. DIFF1 is statistically significant and positive in relation to all non-GAAP earnings at the high level of conditional conservatism but is statistically significant and negative in relation to IBES. DIFF2, however, is statistically significant when conditional conservatism is high is relation to IBES, CORE and CF but is statistically significant and positive at the low level of conditional conservatism in relation to CE. The results show that GAAP earnings generally have incremental value relevance at both levels of conditional conservatism, but the results are weaker at the low level of conditional conservatism.

In the post-GFC period, all non-GAAP earnings are statistically significant and positive at both low and high levels of conditional conservatism for Model 1 and Model 2. DIFF1 is not statistically significant in relation to IBES and CORE but it is statistically significant and positive in relation to CE and CF for both levels of conditional conservatism. DIFF2 is statistically significant and positive only in relation to CF.

Generally, the results show a shift in investors' focus to BV in the post-GFC period in comparison to the pre-GFC and GFC periods. The results for non-GAAP earnings also show an increased emphasis on these earnings in the post-GFC period in comparison to the pre-GFC and GFC period. GAAP earnings have incremental value relevance in relation to CORE, CE and CF, but not in relation to IBES in the post-GFC period. Consistent with my results in Table 7.17 Panel C, the magnitude of BV and its level of statistical significance in both Model 1 and Model 2 are generally smaller in the post-GFC period in comparison to the pre-GFC and GFC periods. Interestingly, in Panels E and F, the magnitude of statistically significant BV is generally larger at the high, in comparison to the low, level of conditional conservatism. In contrast, statistically significant NonGAAPE, DIFF1 and DIFF2 are generally lower at the high level, in comparison to the low, level of condition conservatism. It appears investors trade off the emphasis they place on the book value of equity and earnings. This is also consistent with the argument that conditional conservatism may be negatively related to unconditional conservatism.

7.2.2.4 Non-S&P 500 Sample

7.2.2.4.1 Model Estimation with Main Effects and Interaction Terms

Table 7.19 presents the estimation results of the conditional conservatism models with main effects and interaction variables for the Non-S&P 500 sample. All models are statistically significant across all period windows.

Table 7.19: Ohlson Model: Non-S&P 500 Sample - Multivariate OLS Regression at Earnings Announcement Date by Models with Asymmetric Timeliness Measure Dummy and Interaction Terms as Controls

$$\text{Model 1: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \beta_4 Con_{it} + \beta_5 Con * BV_{it} + \beta_6 Con * NonGAAPE_{it} + \beta_7 Con * DIFF1_{it} + \varepsilon_{it}$$

$$\text{Model 2: } P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \beta_4 Con_{it} + \beta_5 Con * BV_{it} + \beta_6 Con * NonGAAPE_{it} + \beta_7 Con * DIFF2_{it} + \varepsilon_{it}$$

Panel A: Pre-GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.322***	1.327***	1.377***	1.432***	1.370***	1.442***	1.376***	1.438***
	(14.38)	(13.60)	(19.29)	(24.91)	(16.85)	(18.98)	(18.84)	(20.20)
NonGAAPE	10.868*	10.601*	8.764*	8.214*	8.822*	5.931	8.438*	5.730*
	(2.52)	(2.40)	(2.30)	(2.23)	(2.23)	(1.78)	(2.41)	(2.03)
DIFF	3.752	1.787	8.001*	0.124	8.568*	6.530**	8.795*	5.998
	(1.56)	(1.30)	(2.39)	(0.14)	(2.57)	(2.74)	(2.30)	(1.89)
CON	1.435	0.791	1.593	1.731	-0.376	-2.629	1.615	1.394
	(0.32)	(0.17)	(0.27)	(0.29)	(-0.07)	(-0.51)	(0.27)	(0.24)
CON*BV	-0.308	-0.348	-0.005	-0.044	-0.031	-0.157	-0.004	-0.051
	(-0.73)	(-0.79)	(-0.01)	(-0.08)	(-0.06)	(-0.31)	(-0.01)	(-0.09)
CON*NonGAAPE	8.774	10.230*	-3.194	-3.128	-3.985	-1.420	-2.632	-0.474
	(1.87)	(2.16)	(-0.34)	(-0.35)	(-0.43)	(-0.19)	(-0.29)	(-0.06)
CON*DIFF	-22.585***	-17.509**	-2.700	4.515	-15.652	-22.608	-3.202	-0.946
	(-3.45)	(-2.72)	(-0.32)	(1.04)	(-1.38)	(-1.79)	(-0.35)	(-0.13)
Intercept	8.333***	8.418***	8.478***	8.498***	8.455***	8.959***	8.440***	8.834***
	(9.83)	(10.02)	(9.05)	(9.71)	(8.81)	(8.64)	(9.03)	(8.90)
N	8978	8978	8978	8978	8978	8978	8978	8978
Adj R^2	0.7478	0.7433	0.6550	0.6536	0.6689	0.6693	0.6558	0.6479
BIC	85542	85703	88356	88392	87987	87978	88328	88530
BIC Rank	1	2	6	7	4	3	5	8

Panel B: GFC Period

	IBES		CORE		CE		CF	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
BV	1.099***	1.101***	1.250***	1.257***	1.240***	1.245***	1.245***	1.251***
	(6.35)	(6.33)	(6.40)	(6.34)	(6.42)	(6.22)	(6.45)	(6.23)
NonGAAPE	10.506**	10.459**	3.533	3.084	3.642	3.343	3.518	3.148*
	(2.63)	(2.60)	(1.52)	(1.36)	(1.53)	(1.79)	(1.93)	(2.46)
DIFF	0.317	0.501	4.541	4.055***	1.896	1.901	3.846	3.445
	(0.31)	(0.56)	(1.85)	(3.30)	(0.60)	(0.63)	(1.54)	(1.74)
CON	1.761	2.196	0.790	1.347	1.445	0.803	0.819	1.245
	(0.45)	(0.60)	(0.19)	(0.35)	(0.39)	(0.22)	(0.22)	(0.34)
CON*BV	-0.058	-0.051	-0.187	-0.187	-0.198	-0.205	-0.180	-0.187
	(-0.19)	(-0.17)	(-0.59)	(-0.59)	(-0.68)	(-0.70)	(-0.65)	(-0.66)
CON*NonGAAPE	-8.475*	-8.444*	-1.814	-1.488	-1.926	-1.488	-2.136	-1.655
	(-2.00)	(-2.00)	(-0.70)	(-0.58)	(-0.74)	(-0.73)	(-1.14)	(-1.21)
CON*DIFF	0.742	1.041	-2.280	-1.250	-2.778	-3.478	-2.106	-1.631
	(0.81)	(1.42)	(-0.80)	(-0.67)	(-0.73)	(-0.71)	(-0.79)	(-0.78)
Intercept	7.351*	7.358*	8.097*	8.280*	7.776*	7.958**	8.183*	8.338*
	(2.42)	(2.44)	(2.33)	(2.41)	(2.33)	(2.63)	(2.39)	(2.46)
N	3252	3252	3252	3252	3252	3252	3252	3252
Adj R^2	0.6638	0.6662	0.6459	0.6495	0.6506	0.6502	0.6465	0.6493
BIC	30002	29979	30171	30138	30144	30148	30166	30140
BIC Rank	2	1	8	3	5	6	7	4

Panel C: Post-GFC Period

	IBES		CORE		CE		CF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
BV	1.067***	1.057***	1.212***	1.213***	1.194***	1.205***	1.187***	1.197***
	(4.33)	(4.32)	(3.72)	(3.82)	(3.65)	(3.63)	(3.72)	(3.74)
NonGAAPE	10.923*	11.290**	1.368	1.987	1.398	0.848	1.342	0.863
	(2.55)	(2.59)	(0.37)	(0.52)	(0.41)	(0.33)	(0.43)	(0.37)
DIFF	-4.428	-3.503	-4.344	-6.042	2.317	1.707	1.306	0.827
	(-1.74)	(-1.57)	(-0.98)	(-1.41)	(0.59)	(0.50)	(0.39)	(0.32)
CON	-0.086	0.025	-1.168	-0.785	-2.065	-4.067	-1.342	-1.361
	(-0.02)	(0.01)	(-0.24)	(-0.16)	(-0.44)	(-0.88)	(-0.27)	(-0.28)
CON*BV	-0.085	-0.074	-0.204	-0.171	-0.187	-0.180	-0.175	-0.153
	(-0.33)	(-0.29)	(-0.60)	(-0.52)	(-0.55)	(-0.52)	(-0.53)	(-0.46)
CON*NonGAAPE	-5.171	-5.593	2.305	0.296	2.348	1.446	2.549	1.714
	(-1.07)	(-1.16)	(0.59)	(0.07)	(0.66)	(0.52)	(0.79)	(0.68)
CON*DIFF	4.636	3.696	7.840	8.246	-1.058	-8.205	2.204	1.338
	(1.82)	(1.48)	(1.58)	(1.76)	(-0.25)	(-1.86)	(0.61)	(0.48)
Intercept	7.837	7.733	9.235*	8.843	9.511*	9.570*	9.410*	9.428*
	(1.79)	(1.75)	(1.96)	(1.83)	(2.08)	(2.12)	(1.98)	(1.98)
N	7136	7136	7136	7136	7136	7136	7136	7136
Adj R^2	0.7168	0.7162	0.6828	0.6845	0.6823	0.6837	0.6800	0.6793
BIC	65735	65748	66544	66506	66554	66522	66588	66603
BIC Rank	1	2	5	3	6	4	7	8

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics in parentheses and calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, *P*, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF represents DIFF1 in Model 1 and DIFF2 in Model 2. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON = 1 if asymmetric timeliness (AT) measure quintile is 5 and 0 if AT measure quintile is 1. CON*BV = Interaction term of AT measure with book value of common equity per share. CON*NonGAAPE = Interaction term of AT measure with the corresponding non-GAAP earnings measure of IBES, CORE, CE and CF. CON*DIFF = Interaction term of AT measure with the corresponding DIFF measure of DIFF1 and DIFF2.

In the pre-GFC period, BV is strongly significant in all models. NonGAAPE is marginally significant and positive in all models except CE Model 2. DIFF is only statistically significant and positive in relation to CORE Model 1, CE Models 1 and 2, and CF Model 1. CON is not statistically significant. These results show that investors find non-GAAP earnings value relevant at the low level of conditional conservatism. There is some evidence that GAAP earnings are incrementally value relevant, but only in relation to CORE, CE and CF. A high level of conditional conservatism appears to impact only on investors' emphasis on GAAP and non-GAAP in relation to IBES.

Interestingly, CON*DIFF is statistically significant and negative, which indicates that investors decrease the emphasis they place on GAAP earnings when conditional conservatism is high. IBES models perform best among the models tested based on BIC.

During the GFC, investors continue to focus on the book value of equity, which does not appear to be impacted by the level of conditional conservatism. When conditional conservatism is low, only IBES and CF are statistically significant and positive. However, when conditional conservatism is high, IBES is marginally significant and negative. This indicates IBES is positively associated with share price when conditional conservatism is low but is negatively associated with share price when conditional conservatism is high. CON and CON*BV are not statistically significant.

The results for the post-GFC period are generally similar to the results of the GFC period. BV is strongly significant in all models. NonGAAPE is only significant and positive in relation to IBES. All other variables are not statistically significant. These results show that investors are focused predominantly on the book value of equity. There is some evidence investors shift focus away from CORE, CE, CF and GAAP earnings in the GFC and post-GFC period in comparison to the pre-GFC period. In terms of model performance, IBES models perform best among all models tested based on BIC.

7.2.2.4.2 Model Estimation by Low and High Conditional Conservatism

Table 7.20 show the estimation results by low and high conditional conservatism for the non-S&P 500 sample. BV is statistically significant in both Model 1 and Model 2 in relation to all non-GAAP earnings. In Panel A, CORE, CE and CF are marginally significant and positive when conditional conservatism is low. IBES, however, is statistically significant at both low and high levels of conditional conservatism. DIFF1 is marginally significant and positive when conditional conservatism is low in relation to CORE, CE and CF but is moderately significant and negative at the high level of conditional conservatism in relation to IBES. The results for Model 2 in Panel B are generally similar to Model 1 in Panel A.

In the GFC period, BV is strongly significant in both Model 1 and Model 2 in relation to all non-GAAP earnings. IBES is moderately significant and positive at the low level of conditional conservatism for both Model 1 and Model 2. CORE, CE and CF are not significant in Model 1. However, in Model 2 (Panel D), CE is marginally significant at the high level of conditional conservatism and CF is marginally significant at the low level of conditional conservatism.

Table 7.20: Ohlson Model: Non-S&P 500 Sample - Multivariate OLS Regression Results at Earnings Announcement Date by Models and High/Low Asymmetric Timeliness Measure Quintiles

Model 1: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF1_{it} + \varepsilon_{it}$

Model 2: $P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 NonGAAPE_{it} + \beta_3 DIFF2_{it} + \varepsilon_{it}$

Panel A: Pre-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.322***	10.868*	3.752	8.341***	4483	0.8201
	High	1.014*	19.642***	-18.842**	9.772*	4481	0.6996
CORE	Low	1.377***	8.764*	7.999*	8.486***	4483	0.8074
	High	1.372*	5.577	5.245	10.060	4481	0.5535
CE	Low	1.369***	8.822*	8.569*	8.463***	4483	0.8074
	High	1.339*	4.842	-7.130	8.050	4481	0.5768
CF	Low	1.376***	8.438*	8.795*	8.448***	4483	0.8089
	High	1.372*	5.809	5.597	10.044	4481	0.5537

Panel B: Pre-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.327***	10.601*	1.787	8.426***	4483	0.8179
	High	0.979*	20.842***	-15.785**	9.221*	4481	0.6937
CORE	Low	1.432***	8.214*	0.125	8.506***	4483	0.8041
	High	1.388*	5.104	4.616	10.212	4481	0.5534
CE	Low	1.441***	5.931	6.532**	8.968***	4483	0.7888
	High	1.285**	4.523	-16.065	6.313	4481	0.5897
CF	Low	1.438***	5.730*	5.998	8.843***	4483	0.7895
	High	1.387*	5.269	5.065	10.214	4481	0.5536

Panel C: GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.099***	10.509**	0.317	7.360*	1623	0.7295
	High	1.041***	2.031	1.060	9.119**	1622	0.5554
CORE	Low	1.250***	3.534	4.541	8.101*	1623	0.7012
	High	1.063***	1.719	2.263	8.892**	1622	0.5538
CE	Low	1.240***	3.642	1.897	7.780*	1623	0.7021
	High	1.042***	1.716	-0.881	9.229**	1622	0.5647
CF	Low	1.245***	3.519	3.846	8.188*	1623	0.7018
	High	1.064***	1.382	1.740	9.008**	1622	0.5545

Panel D: GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.101***	10.462**	0.501	7.366*	1623	0.7297
	High	1.050***	2.015	1.543	9.563***	1622	0.5613
CORE	Low	1.257***	3.084	4.055**	8.284*	1623	0.7016
	High	1.071***	1.595	2.806**	9.636***	1622	0.5629
CE	Low	1.245***	3.343	1.902	7.962**	1623	0.7016
	High	1.039***	1.855*	-1.572	8.768***	1622	0.5645
CF	Low	1.251***	3.149*	3.445	8.342*	1623	0.7020
	High	1.064***	1.493	1.814*	9.591***	1622	0.5616

Panel E: Post-GFC - Model 1

	CON Quintile	BV	NonGAAPE	DIFF1	Intercept	N	Adj R^2
IBES	Low	1.067^{***}	10.923^{*}	-4.428	7.833	3567	0.7019
	High	0.982^{***}	5.746^{**}	0.205	7.742^{***}	3567	0.7453
CORE	Low	1.212^{***}	1.368	-4.344	9.231^{*}	3567	0.6609
	High	1.009^{***}	3.668^{*}	3.491	8.058^{***}	3567	0.7314
CE	Low	1.194^{***}	1.399	2.318	9.507^{*}	3567	0.6576
	High	1.008^{***}	3.742^{*}	1.257	7.438^{***}	3567	0.7400
CF	Low	1.187^{***}	1.342	1.306	9.406^{*}	3567	0.6568
	High	1.012^{***}	3.885^{**}	3.507^{*}	8.060^{***}	3567	0.7326

Panel F: Post-GFC - Model 2

	CON Quintile	BV	NonGAAPE	DIFF2	Intercept	N	Adj R^2
IBES	Low	1.057^{***}	11.290^{**}	-3.503	7.729	3567	0.7012
	High	0.984^{***}	5.692^{**}	0.192	7.750^{***}	3567	0.7453
CORE	Low	1.213^{***}	1.987	-6.042	8.840	3567	0.6637
	High	1.042^{***}	2.280	2.202	8.050^{***}	3567	0.7298
CE	Low	1.205^{***}	0.848	1.708	9.567^{*}	3567	0.6570
	High	1.025^{***}	2.293	-6.486^{**}	5.499^{***}	3567	0.7481
CF	Low	1.197^{***}	0.863	0.827	9.424^{*}	3567	0.6564
	High	1.044^{***}	2.573	2.164	8.058^{***}	3567	0.7313

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

t statistics are calculated with standard errors clustered on firm and time (fiscal quarters).

The dependent variable, P, is closing share price at earnings announcement date. The independent variables are defined as follows: BV = Book value of common equity per share. NonGAAPE represents the following variables for IBES, CORE, CE and CF models: IBES = I/B/E/S earnings per share as computed by security analysts. CORE = S&P Core earnings per share. CE = Net income per share, after adding back depreciation and amortisation expenses. CF = Operating cash flows per share. DIFF1 = GAAP1 minus the relevant non-GAAP earnings, where GAAP1 is earnings per share from operations adjusted to exclude the effects of special items reported under GAAP. DIFF2 = GAAP2 minus the relevant non-GAAP earnings, where GAAP2 is income before extraordinary items per share reported under GAAP. CON quintile is Low if asymmetric timeliness (AT) measure quintile is 1 and High if AT measure quintile is 5. Low and High indicate low conditional conservatism and high conditional conservatism, respectively.

The results for DIFF1 and DIFF2 are mixed. DIFF1 is not statistically significant. DIFF2 is statistically significant and positive in relation to CORE at both levels of conditional conservatism. However, DIFF2 is significant and positive in relation to CF at the high level of conditional conservatism.

The results for the GFC period show investors became more focused on the book value of equity at the high level of conditional conservatism in comparison to the pre-GFC period. There is some evidence that non-GAAP earnings are value relevant and that GAAP earnings are incrementally value relevant. However, the results generally suggest that investors shifted their focus away from earnings to the book value of equity during the GFC.

In the post-GFC period, BV is strongly significant in all models. Panel E shows IBES, CORE, CE and CF are statistically significant and positive at the high level of conditional conservatism. Also, IBES is statistically significant and positive at the low level of conditional conservatism. DIFF1 is only marginally significant and positive in relation to CF at the high level of conditional conservatism. In Panel F, IBES is moderately significant and positive at both levels of conditional conservatism. However, CORE, CE and CF are not statistically significant. DIFF2 is moderately significant and negative in relation to CE at the high level of conditional conservatism. However, DIFF2 is not statistically significant in relation to IBES, CORE and CF.

Generally, the results of the post-GFC period show that non-GAAP earnings are value relevant in Model 1. The results are weaker in Model 2. There is some evidence that GAAP earnings are incrementally value relevant in the pre-GFC period but less so in the post-GFC period. There appears to be a shift in investors' focus on GAAP earnings between the pre- and post-GFC periods. It appears that in the GFC and post-GFC period, investors place greater emphasis on the book value of equity, particularly at the high level of conditional conservatism, in comparison to the pre-GFC period.

7.3 DISCUSSION

The results of the two alternative analyses – examining the main effects and interaction terms and examining the base models by low and high level of conservatism – provide complementary evidence. In summary, there is strong evidence investors predominantly focus on the book value of equity in valuing firms. While there is evidence that GAAP and non-GAAP earnings are value relevant, it appears that share price is driven predominantly by the book value of equity. This result holds generally across all samples. In contrast, investors' focus on GAAP and non-GAAP earnings are not consistent across samples. Furthermore, I find evidence of a trade off in the relative emphasis investors place on the book value of equity and earnings at the high level of conservatism in comparison to the low level of conservatism. The results also show the GFC has an impact and that there is an observable shift in investors focus on the book value of equity and earnings due to the GFC. The analyses in this chapter provide additional insights into the specific impact that conservatism has on the value relevance of non-GAAP earnings and the incremental value relevance of GAAP earnings.

7.3.1 Unconditional Conservatism – Market-to-Book Ratio

The results for the financial sector sample under unconditional conservatism show investors predominantly focus on the book value of equity. Nevertheless, I find GAAP earnings have incremental value relevance. Also, the results show a shift in investors' focus as a result of the GFC. In the pre-GFC period, investors' focus appears to be on non-GAAP earnings and GAAP earnings at the high level of unconditional conservatism. However, after the GFC, investors' focus appears to be on GAAP and non-GAAP earnings when unconditional conservatism is low. Both GAAP and non-GAAP earnings are statistically significant in Model 1 in the post-GFC period only at the low level of unconditional conservatism. Similarly, DIFF1 and DIFF2 are generally more significant when unconditional conservatism is low.

The GFC had a profound impact on financial firms. Prior to the GFC, the book value of assets of financial firms may be overstated and there was a correction during and after the GFC that resulted in the book value of assets of financial firms being closer to the average. Table 3.1 Panel A in Chapter 3 show that the average book value of equity decreased from the pre-GFC period through to the post-GFC period for financial sector firms. In Chapter 3, I find evidence consistent with this argument over the three period windows. In relation to the MTB ratio, the measure of unconditional conservatism already incorporates the effects of changes to the value of assets. Therefore, when unconditional conservatism is low, investors find GAAP earnings, which are generally closer to, or lower than, non-GAAP earnings incrementally value relevant. This may explain the significant and negative coefficient of DIFF1 and DIFF2 in the GFC period. In the post-GFC period, DIFF1 and DIFF2 are significant and positive when unconditional conservatism is low. These contrasting results suggest that investors find GAAP earnings incrementally value relevant. An explanation is that investors find GAAP earnings more credible and reliable when unconditional conservatism is low.

In the non-financial sector and non-S&P 500 samples, it is more evident that investors focus predominantly on BV and place comparatively lower emphasis on both GAAP and non-GAAP earnings in the pre- and post-GFC period. During the GFC, however, there is some evidence of a shift in investors' focus back to non-GAAP earnings for firms not in the financial sector. While there is also some evidence GAAP earnings have incremental value relevance, they are not consistent across the levels of unconditional conservatism or in relation to all non-GAAP earnings. There is evidence, however, that the share price of non-financial firms is discounted by investors when unconditional conservatism is low in the post-GFC period. Investors find GAAP earnings incrementally value relevant but the sign is negative, i.e., DIFF1 and DIFF2 are negative and significant. It seems that after the GFC, investors may be concerned with overstatement of the book value of net assets. In contrast, the results for financial firms show similar evidence of a discount for low unconditional conservatism in the GFC period. However, in the post-GFC period, both DIFF1 and DIFF2 are generally significant and positive in relation to non-GAAP earnings for financial firms. An explanation is investors may be less concerned with overstatement of the book value of net assets in financial firms due to the severe impact and correction in book value that occurred during the GFC.

For firms in the S&P 500 index, I also find investors' focus is predominantly on the book value of equity in the pre-GFC, GFC and post-GFC periods. However, non-GAAP earnings are mainly value relevant in the pre- and post-GFC periods across the levels of unconditional conservatism. During the GFC, non-GAAP earnings are generally value relevant when unconditional conservatism is high. While GAAP earnings have incremental value relevance, they are generally in relation to CORE, CE and CF but not in relation to IBES. The results suggest that after the GFC, investors' focus on GAAP earnings decreased. An explanation for this is the emphasis investors place on the book value of equity, which already incorporates the financial information regarding unconditional conservatism as measured by the MTB ratio. Another explanation is that large firms are generally stable and able to survive the GFC. Therefore, GAAP earnings may not be as value relevant as the value of net assets of a large firm.

The results across all samples show the magnitude of statistically significant BV to be larger at high level of unconditional conservatism in comparison to low level of unconditional conservatism. I observe this positive association between unconditional conservatism and BV in all my samples for the pre-GFC, GFC and post-GFC periods. This finding is consistent with prior studies that show that unconditional conservatism is positively related to firm value (Francis *et al*., 2013). More interestingly, however, is the result for NonGAAPE, DIFF1 and DIFF2 where they are statistically significant at both low and high levels of unconditional conservatism for a given measure of non-GAAP earnings. Where this occurs, for example, in Table 7.6 Panels A and C, and Table 7.10 Panels A and E, the magnitude of the coefficient is consistently larger at the high level of unconditional conservatism relative to the low level of unconditional conservatism. This result suggests investors may trade off the relative emphasis they place on earnings when unconditional conservatism is low in comparison top when it is high.

In terms of model performance, it appears that IBES models generally perform best among the models tested in the non-financial sector, S&P 500 and non-S&P 500 samples. The results are mixed in the financial sector sample.

7.3.2 Conditional Conservatism – Asymmetric Timeliness Measure

In contrast, the results for conditional conservatism are mixed in relation to investors' focus on GAAP and non-GAAAP earnings and the impact of the GFC. Nevertheless, the results show evidence that investors are focused predominantly on the book value of equity. The results also show the impact of the GFC on investors' focus is most evident in the financial sector and non S&P 500 samples.

In the financial sector sample, the shift in in investors' focus is more evident from the GFC to the post-GFC period. In the post-GFC period, investors appear to place greater emphasis on GAAP and non-GAAP earnings when conditional conservatism is high. The results indicate that investors find GAAP earnings incrementally value relevant when conditional conservatism is high but not when it is low. Furthermore, the positive significant coefficients for DIFF1 and DIFF2 are consistent with investors finding GAAP earnings more credible and reliable.

The results for the non-S&P 500 sample also show a shift in investors' focus after the GFC. In the pre-GFC period, I find evidence that non-GAAP earnings are generally value relevant at low level of conditional conservatism and some evidence that GAAP earnings are incrementally value relevant. In contrast, non-GAAP earnings and DIFF1 are generally not statistically significant in Model 1 in the GFC period. However, non-GAAP earnings are generally value relevant when conditional conservatism is high in the post-GFC period. These results suggest that investors place greater emphasis on non-GAAP earnings before and after the GFC but not during the GFC. An explanation is investors may be concerned about the viability of small firms during the GFC and focus on the book value of equity relative to earnings.

The results for the non-financial sample show that GAAP and non-GAAP earnings are value relevant before, during and after the GFC. However, there is weak evidence in the pre-GFC period indicating that investors place greater emphasis on GAAP earnings, which are closer to, or lower than, IBES when conditional conservatism is high. It appears that investors may perceive non-GAAP earnings to be overstated when conditional conservatism is relatively low. However, investors changed their emphasis in the GFC and post-GFC periods, where statistically significant DIFF1 and DIFF2 are generally positive. The evidence suggests that investors find GAAP earnings incrementally value relevant even when conditional conservatism is high in the post-GFC period, which is consistent with investors finding GAAP earnings more reliable and credible. However, there is also some evidence that when conditional conservatism is low, investors place greater emphasis on GAAP earnings, which are closer to, or lower than, IBES.

In the S&P 500 sample, the results show that GAAP earnings generally have incremental value relevance in relation to non-GAAP earnings in the pre-GFC and GFC periods. After the GFC, however, GAAP earnings are not incrementally value relevant in relation to IBES and CORE. GAAP earnings generally remain incrementally value relevant in relation to CE and CF at both low and high levels of conditional conservatism. These results are similar to those in the tests of the same sample under unconditional conservatism. Additionally, these results are not observed in the non-S&P 500 sample in relation to CORE, CE and CF. The evidence show that the results may be due to the firm size.

In terms of model performance, IBES models appear to perform consistently better than the other models tested. This result generally holds across all samples. Overall, my results, in terms of model performance are generally consistent with prior studies.

7.4 SUMMARY AND CONCLUSIONS

In Chapter 3, my results indicate that the emphasis investors place on alternative earnings measure is fluid and that the GFC had an impact on the value relevance of GAAP and non-GAAP earnings. Additionally, in Chapter 5, I find some evidence of a systematic association between investors' focus on comparatively lower values of GAAP earnings and information asymmetry. In this chapter, I investigate whether conservatism, unconditional and conditional, has an impact on the results in Chapter 3 and Chapter 5. Overall, I find there is a systematic association between conservatism and the emphasis investors place on the book value of equity and both GAAP and non-GAAP earnings. Furthermore, the systematic association is subject to the measure of conservatism and sample selection.

In the analyses under both unconditional and conditional conservatism, the results generally show that GAAP earnings have incremental value relevance over non-GAAP earnings. However, both the measure of conservatism and sample selection have an impact on the results. Under unconditional conservatism, there is evidence GAAP earnings are incrementally value relevant in the financial sector and S&P 5000 samples. However, there is little evidence that GAAP earnings are incrementally value relevant in the non-financial sector and non S&P 500 samples. In contrast, under conditional conservatism, there is evidence that GAAP earnings are incrementally value relevant in the non-financial sector sample in all three period windows.

I also find evidence that the GFC had an impact on investors' focus on book value of equity and earnings. Specifically, I find investors are predominantly focused on the book values of net asset in the pre-GFC period. However, after the GFC, there is greater emphasis placed on earnings, particularly non-GAAP earnings. This is generally more evident under conditional conservatism than under unconditional conservatism. Furthermore, under unconditional conservatism, I find evidence of a trade off in investors' focus on earnings between low and high levels of unconditional conservatism.

I find that size is a factor in my results for the S&P 500 sample under unconditional conservatism. The results from the sample of large firms are in contrast to the results from the non-S&P 500 sample. Investors place greater emphasis on book values of equity and non-GAAP earnings in large firms in comparison to small firms.

In relation to *RQ4*, I find the differences in the results between the pre- and post-GFC period show that the GFC had an impact on the value relevance of GAAP and non-GAAP earnings. Additionally, I find a systematic association between the level of conservatism and GAAP earnings, where GAAP earnings are positively related with the level of conservatism. That is, relatively higher GAAP earnings result with relatively higher DIFF1 and DIFF2, which are significant and positive in my results. I find this consistent with the argument that investors find GAAP earnings incrementally value relevant because GAAP earnings are more credible and reliable. If investors favour lower values (i.e., more conservative) of GAAP earnings in comparison to non-GAAP earnings, I expect to observe a negative relationship between my DIFF variable and share price when the level of conservatism is high.

CHAPTER 8

CONCLUSIONS

8.1 INTRODUCTION

This chapter concludes my thesis. In this chapter, I provide a general overview of my study and the preceding chapters, discuss the significant research findings and research contributions, and identify the limitations of my study. I also offer suggestions for future research.

8.2 GENERAL OVERVIEW OF STUDY

I begin this study with an overview of the current literature on the value relevance and information content of GAAP and non-GAAP earnings in Chapter 1. I also highlight the role of information professionals, such as security analysts and credit rating agencies, as alternative sources of earnings information. The role of credit rating agencies and the alternative earnings information they provide have not received as much attention in the literature as those of security analysts. I identify gaps in the literature and how my study contributes to the literature and addresses these gaps. I conclude Chapter 1 with an overview of the chapters in my study.

I discuss the background and review the literature relevant to my study in Chapter 2. Much of the research use samples with data from before 2010 (Albring *et al.*, 2010; Bhattacharya *et al.*, 2003; Bradshaw and Sloan, 2002; Brown and Sivakumar, 2003). In the period between 2008 to 2010, the financial markets experienced a global financial crisis (GFC). Consequently, prior research on the value relevance of GAAP and non-GAAP earnings do not address the impact this event has on the value relevance of GAAP and non-GAAP earnings. The GFC offers a unique opportunity to examine the impact of such an event on investors. Specifically, whether this event impacts on the financial information in earnings that investors find relevant to their valuation of a firm. Furthermore, prior studies have identified that information risk is priced by the market (Easley and O'Hara, 1992) Therefore, factors that affect information risk, such as information asymmetry, earnings quality and conservatism have an impact on firm value (e.g., Bhattacharya *et al.*, 2003; Easley and O'Hara, 2004; Bhattacharya *et al.*, 2013; Francis *et al.*, 2013). This leads to the following research questions:

RQ1: *What is the impact of the Global Financial Crisis on the value relevance of GAAP and Non-GAAP earnings?*

RQ1a: *What is the impact of the Global Financial Crisis on the information content of GAAP and Non-GAAP earnings?*

RQ2: *What is the impact of information asymmetry on the comparative value relevance of GAAP and Non-GAAP earnings?*

RQ3: *What is the impact of earnings quality on the comparative value relevance of GAAP and Non-GAAP earnings?*

RQ4: *What is the impact of conservatism on the comparative value relevance of GAAP and Non-GAAP earnings?*

In turn, I review and discuss the literature relating to the value relevance and information content of GAAP and non-GAAP earnings. I review the literature on information asymmetry, earnings quality and conservatism, including their measures, and how these may impact on the value relevance of GAAP and non-GAAP earnings. I also present my research design and the empirical models I use for my study. I use the valuation of model of Ohlson (1995; 1999) to address *RQ1* and a CAR model to address *RQ1a*.

The Ohlson (1995; 1999) model also serves as my base valuation model to examine the impact of information asymmetry, earnings quality and conservatism on the value relevance of GAAP and non-GAAP earnings. I adopt the measure of information asymmetry in Maskara and Mullineaux (2011), the measure of earnings quality in Ecker *et al*. (2006), the measure of unconditional conservatism in Roychowdhury and Watts (2007), and the measure of conditional conservatism in Basu (1997). I use two alternative approaches to address *RQ2*, *RQ3* and *RQ4*. In the first approach, I include additional control variables in my base valuation model, which examine the main effects and interactions of my test variables with the relevant factor, i.e., information asymmetry, earnings quality and conservatism, under consideration. In the second approach, I use a sub-sample of firms in the extreme quintiles, i.e., quintile 1 and quintile 5, of the factor under consideration and re-estimate my base valuation model for the firms in these quintiles. Both of these approaches provide complementary and additional insights into the impact of the factors on the value relevance of GAAP and non-GAAP earnings.

Finally, I identify the period windows for study to partition my sample, address issues in relation to the panel data set of my sample and correct for firm and time dependence (Gow *et al.*, 2010; Petersen, 2009; Thompson, 2010), discuss the method of evaluating my model based on BIC, and describe my sample selection.

The next five chapters present my analyses and results. Chapter 3 reports my findings on the value relevance of GAAP and non-GAAP earnings. Chapter 4 reports my findings on the information content of GAAP and non-GAAP earnings. Chapter 5 through to Chapter 7 examine the impact of information asymmetry, earnings quality and conservatism, respectively, on the value relevance of GAAP and non-GAAP earnings.

Finally, I conclude my study in this chapter, Chapter 8. Section 8.3 presents the significant research findings of my study. Section 8.5 identifies the limitations of my study and Section 8.6 offers suggestions for future research.

8.3 SIGNIFICANT RESEARCH FINDINGS

8.3.1 Partial Support of Prior Studies

Prior studies consistently find non-GAAP earnings, e.g., I/B/E/S and S&P Core earnings, to be more value relevant than GAAP earnings (e.g., Bradshaw and Sloan, 2002; Albring *et al.*, 2010; Bhattacharya *et al.*, 2003; Brown and Sivakumar, 2003). Many of these studies are unequivocal in finding GAAP earnings to be inferior to non-GAAP earnings. My study, however, shows that the results are generally sensitive to sample and statistical method. In this section, I focus on my results from the pre-GFC period as it excludes the effects of the GFC and are more comparable to prior studies cited above.

First, I find that I/B/E/S and S&P core earnings are not consistently the best performing model and that GAAP earnings have incremental value relevance. My results show that GAAP earnings are generally incrementally value relevant in the financial sector sample but not in the non-financial sector and non-S&P 500 samples in relation to the non-GAAP earnings tested. Also, GAAP earnings are not incrementally value relevant in relation to I/B/E/S earnings in the S&P 500 sample. My results show the value relevance of GAAP earnings is sensitive to industry. Nevertheless, where I/B/E/S earnings models are ranked highest in my tests, GAAP earnings are generally not incrementally value relevant and, in this regard, my findings support prior studies.

Second, using a more comprehensive approach than prior studies, I test two different measures of GAAP earnings - GAAP earnings from operations adjusted to exclude special items and GAAP income before extraordinary items. As the former is more closely aligned with I/B/E/S and S&P Core earnings, it will bias against finding statistical significance. However, I generally find stronger results with GAAP earnings from operations adjusted to exclude special items than with GAAP income before extraordinary items. My results indicate investors are focused on GAAP measures of recurring earnings. Furthermore, the incremental value relevance of a GAAP earnings measure that is more closely aligned with I/B/E/S and S&P Core earnings is consistent with investors finding these GAAP earnings more credible and reliable.

Third, I find that firm size and industry impact on the value relevance of non-GAAP earnings. In the non-financial sector and non-S&P 500 samples, my results show all non-GAAP earnings are not value relevant in my base models in the pre-GFC period. I find that investors are focused predominantly on the book value of net assets. In contrast, all non-GAAP earnings are value relevant in the financial sector and S&P 500 samples in the same period.

Finally, I partially replicate Albring *et al*. (2010) using my sample and find similar results. Therefore, my reported results in this study are partially explained by my statistical technique. Gow *et al*. (2010) Petersen (2009) and Thompson (2010) demonstrate that not correcting for firm and time dependence in a panel data sample yields biased results that are more likely to reject the null. Consistent with these studies, my statistical analyses cluster the standard errors on both firm and time to obtain consistent and robust results.

8.3.2 Impact of the GFC

My results show that the GFC had an impact the value relevance of GAAP and non-GAAP earnings to investors. I find that investors' relative emphasis on GAAP and non-GAAP earnings is fluid. In the non-financial sector results of my base models, investors' focus is predominantly on the book value of net assets in the pre-GFC period, and non-GAAP earnings are not value relevant. During the GFC, investors find I/B/E/S earnings value relevant. In the post-GFC period, investors find all non-GAAP earnings tested value relevant. I find similar results of increased value relevance for non-GAAP earnings in the S&P 500 sample in the pre-GFC period in comparison to the post-GFC period. In the non-S&P 500 sample, however, I find increased value relevance only in relation to I/B/E/S earnings.

Subsequent analyses of the impact of information asymmetry, earnings quality and conservatism yield similar results that show investors change their focus on the value relevance of alternative earnings measures as a consequence of the GFC. Interestingly, the evidence shows investors' focus in the post-GFC period does not revert to a similar focus as in the pre-GFC period. It appears that investors may have adjusted their relative emphasis on GAAP and non-GAAP earnings.

8.3.3 Impact of Information Asymmetry

I find evidence of a systematic association between the level of information asymmetry and value relevance of GAAP and non-GAAP earnings and further evidence of a change in investors' focus from the pre-GFC period to the post-GFC period. A comparison of Table 3.3 and Table 3.4 in Chapter 3 with Table 5.1 and Table 5.2 in Chapter 5, respectively, clearly shows the impact of the GFC and information asymmetry on the value relevance of GAAP and non-GAAP earnings.

The results from the financial sector sample show both GAAP and non-GAAP earnings are generally value relevant when information asymmetry is high before the GFC. However, during the GFC, I find evidence of investors placing greater focus on book value of net assets when information asymmetry is high. In the post-GFC period, investors return their focus to GAAP and non-GAAP earnings when information asymmetry is high. Notably, in the case of I/B/E/S and S&P Core earnings, I find a positive relationship between GAAP earnings and share price when information asymmetry is high. This indicates GAAP earnings are incrementally value relevant when information asymmetry is high but not when it is low. An explanation is that investors find GAAP earnings credible and reliable and that GAAP earnings mitigate information risk.

My results from the non-financial sector and non-S&P 500 samples also show observable shifts in investors' emphasis when comparing the post-GFC period with the pre-GFC and GFC periods. In both these samples, non-GAAP and GAAP earnings are significantly and negatively related with share price only when information asymmetry is high in the pre-GFC period. In contrast, non-GAAP and GAAP earnings are significantly and positively related with share price at both low and high levels of information asymmetry in the post-GFC period. The evidence from my samples is consistent with investors seeking more reliable and credible information after the GFC.

8.3.4 Impact of Earnings Quality

In examining the impact of earnings quality, I use the e-loading measure of Ecker *et al.* (2006), which measures investors' exposure to low quality earnings. I find further evidence of a change in investors' focus over time and that earnings quality is a factor. As with my discussion of information asymmetry above, a similar comparison of Table 3.3 and Table 3.4 in Chapter 3 with Table 6.1 and Table 6.2 in Chapter 6, respectively, clearly shows the impact of the GFC and exposure to low quality earnings on the value relevance of GAAP and non-GAAP earnings.

In the non-financial and non-S&P-500 samples, I find both GAAP and non-GAAP earnings are generally negatively related to share price when exposure to low quality earnings is high in the pre-GFC period. My results indicate that investors price down shares when exposure to low quality earnings is high in the pre-GFC period. I find similar results during the GFC, including a positive relationship between share price and GAAP and non-GAAP earnings when exposure to low quality earnings is low in the non-financial sector sample. However, in the post-GFC period, investors do not generally find GAAP earnings value relevant when exposure to poor quality earnings is high. In contrast, investors place greater emphasis on non-GAAP earnings when exposure to poor quality earnings is high. I do not find similar results for financial firms and large firms. Nevertheless, my results from the financial firms and large firms samples do provide evidence of a shift in investors' emphasis on non-GAAP earnings in the post-GFC period in comparison to the pre-GFC and GFC periods.

8.3.5 Impact of Conservatism

I find evidence of a systematic relationship between the level of conservatism, under both unconditional and conditional conservatism, and investors' emphasis on GAAP and non-GAAP earnings. A comparison of Table 3.3 in Chapter 3 with Table 7.1 and Table 7.3 in Chapter 7 show the impact of unconditional conservatism and the GFC on the results. Similarly, a comparison of Table 3.4 in Chapter 3 with Table 7.2 and Table

7.4 in Chapter 7 shows the impact of conditional conservatism and the GFC on the results. I also find evidence of a shift in investors' emphasis between the pre-GFC and post-GFC periods under both unconditional and conditional conservatism. Interestingly, I also find evidence consistent with investors trading off the relative emphasis they place on earnings when unconditional conservatism is low in comparison to when it is high.

In the non-financial sector sample, investors focus predominantly on the book value of net assets in the pre-GFC period at both low and high levels of unconditional conservatism. However, in the post-GFC period, investors increase their focus on non-GAAP earnings when unconditional conservatism is low. The market-to-book ratio, which measures unconditional conservatism, captures some of the financial information in current earnings and explains the weak finding of an association between GAAP earnings and share price.

My results under conditional conservatism are mixed. There is some evidence of a shift in investors' focus over time, however, the results show investors focus more strongly on the book value of net assets. Generally, I find a positive relationship between GAAP earnings and the level of conservatism in the pre-GFC period.

8.3.6 Summary

The results of the tests above, when considered together, show strong evidence that the GFC affected the emphasis investors place on GAAP and non-GAAP earnings. There is also evidence consistent with investors finding GAAP earnings more credible and reliable. Interestingly, investors do not appear to consistently focus on earnings information and place relatively stronger and consistent emphasis on the book value of net assets. Furthermore, contrary to prior research, investors' emphasis on earnings is fluid and shifts over time, and that GAAP earnings do have incremental value relevance. Overall, I find factors that impact on information risk affects the relative emphasis that investors' place on GAAP and non-GAAP earnings. Finally, I find industry, size and the statistical tests used have an impact on the results.

8.4 RESEARCH CONTRIBUTIONS

The GFC offers a unique opportunity to examine the value relevance of both GAAP and non-GAAP earnings that is previously unavailable to researchers. My study contributes to the literature and provides evidence of the shift in investors' focus on the value relevance of earnings as a result of a tumultuous economic event. I also adopt a more comprehensive approach to examine the comparative value relevance of GAAP and non-GAAP earnings, using two alternative GAAP earnings measures and four alternative non-GAAP earnings measures. My study provides greater insights on the relative importance of different earnings measures to investors. My finding indicates that GAAP earnings are value relevant to investors, however, alternative earnings models perform differently over time. While investors appear to prefer I/B/E/S earnings, this is not consistent over time. Furthermore, I find different results for financial firms in comparison to non-financial firms.

My study also controls for low and high levels of information asymmetry, earnings quality and conservatism to examine their impact on the value relevance of alternative earnings measures. My results fill a gap in the literature as prior studies do not address these factors when examining the value relevance of GAAP and non-GAAP earnings.

Finally, prior studies generally use a pooled data approach and do not control for both firm and time dependencies. My results provide further evidence of a bias from not correcting for these dependencies in the statistical approach.

8.5 LIMITATIONS OF THE RESEARCH

My study is primarily focused on the value relevance of alternative earnings measures using quarterly earnings data. Using quarterly data allows a more timely examination of the effects of the GFC, which is the primary aim of my study. However, it also imposes certain limitations on the study.

While reported quarterly earnings have to comply with GAAP when announced by firms, they are generally unaudited, unlike annual earnings. Consequently, reported quarterly earnings are also more likely to be restated subsequent to the initial earnings announcement. Investors may rely more on information professionals, such as security analysts and credit rating agencies, for earnings information that are more relevant and less likely to be subjected to restatements. Also, investors may anticipate restatements of GAAP earnings. Therefore, investors may find as-first-reported earnings less relevant. Consequently, this may biased against finding results in relation to GAAP earnings.

Currently, there is no clear reliable measure of conditional conservatism, particularly for measuring it at a firm specific level. While several measures have been proposed in the literature, none are ideal. My choice of the asymmetric timeliness measure in Basu (1997) is based on its widespread use in the literature. While I use the measure to assign firms into quintiles, and not as a predictor in my model, the risk of misclassification remains. Similarly, this limitation equally applies to my measures of information asymmetry and earnings quality. In the latter two cases, the limitation is mitigated to some extent through the use of an index that averages several measures of information asymmetry and a measure earnings quality (i.e., e-loading) that has been tested for construct validity.

In my model specification, I use non-GAAP earnings as the primary test variable. This biases the results in finding significance for non-GAAP earnings and may bias against finding significance in GAAP earnings.

Finally, I separately test the impact of three factors that affect information risk or may impact on the value relevance of alternative earnings measures, which are information asymmetry, earnings quality and conservatism. These factors, however, are interrelated and I have not examined the joint effects of these factors.

8.6 SUGGESTIONS FOR FUTURE RESEARCH

My findings indicate that the homogenous nature of my financial sector and S&P 500 samples may be a factor in my results. Furthermore, my results indicate investors focus more strongly on book value of equity relative to earnings and that investors' focus on earnings is fluid. These finding provide several potential opportunities for future research. A more refined approach that better controls for firm size and industry may identify more specific factors that explain the fluid nature of investors' focus on value relevant earnings information.

Additionally, the evidence of a change in investors' focus warrants further investigation. Specifically, the results of the post-GFC period show a discernible difference in investors' focus relative to the results of the pre-GFC period. This may indicate investors may have not fully appreciated the value relevance of earnings information in the pre-GFC period. It may also indicate possible mis-valuation of share price and that, due to the GFC, a correction occurs in the GFC period and continues in the post-GFC period.

Future research can also address the limitations identified above. This includes examining the joint effects of information asymmetry, earnings quality and conservatism on the value relevance of alternative earnings measures. Such studies could provide more insights into how investors manage and trade off between information risk, relevance and reliability in relation to alternative earnings measures.

Future studies may also examine the effects of restatements of GAAP earnings. This may provide insights into the extent to which restatements cause investors to revise their valuation of share price. The extent to which investors anticipate restatement of quarterly GAAP earnings may impact on the emphasis investors place on the initial earnings announcement. Furthermore, this may have implications on how investors perceive the credibility and reliability of GAAP earnings in relation to non-GAAP earnings.

8.7 SUMMARY

My study highlights the impact of the GFC on the value relevance of GAAP and non-GAAP earnings. GAAP earnings are incrementally value relevant, however, this varies with factors such as firm size and industry. Furthermore, factors such information asymmetry, earnings quality and conservatism affect the relative level of emphasis investors place on alternative measures of earnings.

Investors' emphasis on both GAAP and non-GAAP earnings are fluid; it varies with the economic conditions. The results from examining the impact of the GFC shows investors change the emphasis they place on alternative earnings measures over time. This includes pricing shares to compensate for risk factors. Nevertheless, the evidence suggests investors are strongly focused on the book value of net assets in their valuation decision.

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